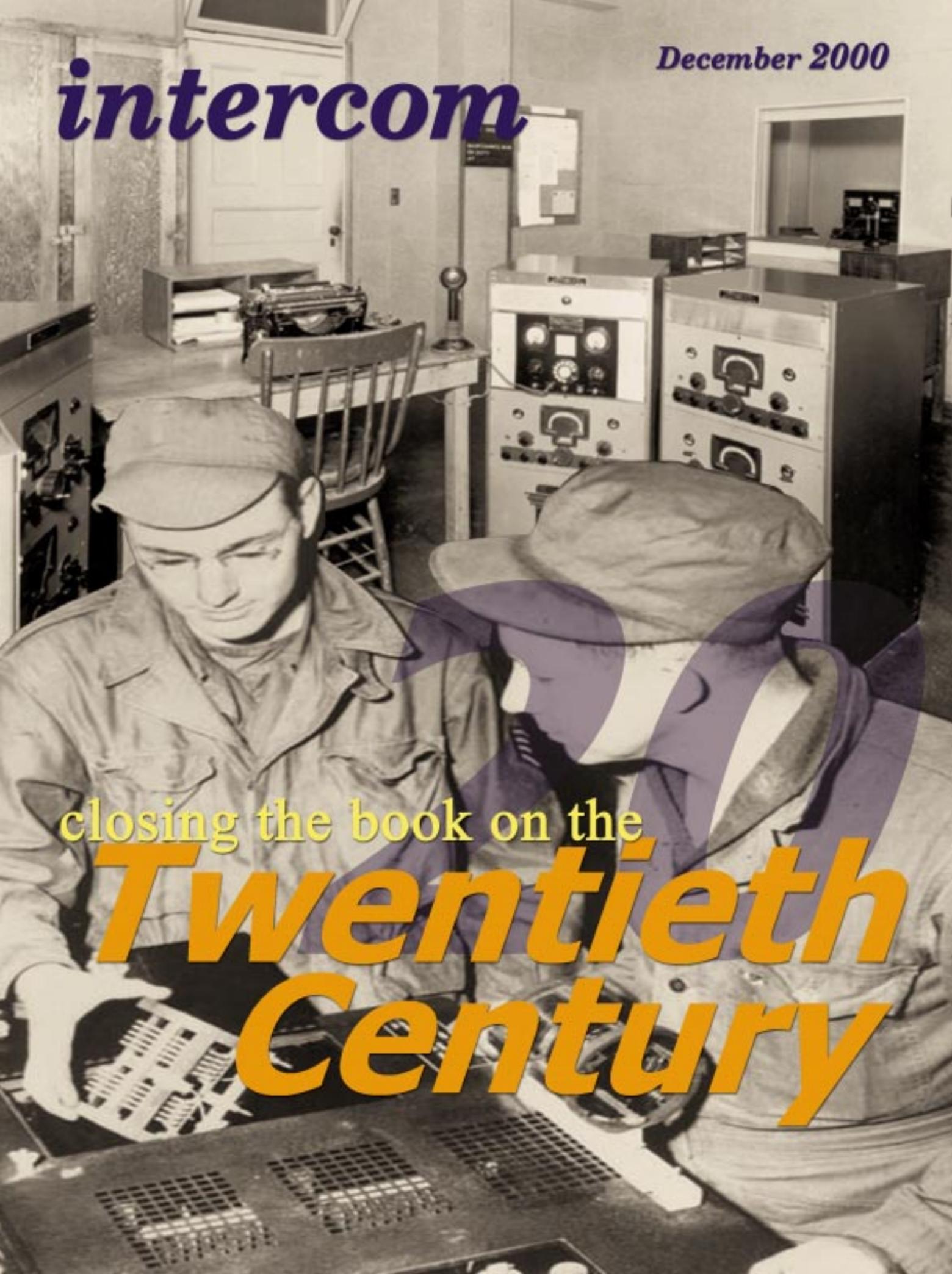
December 2000

intercom



closing the book on the Twentieth Century

intercom

Volume 41, No. 12

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Editorial content is edited, prepared and provided by the public affairs office of the Air Force Communications Agency.

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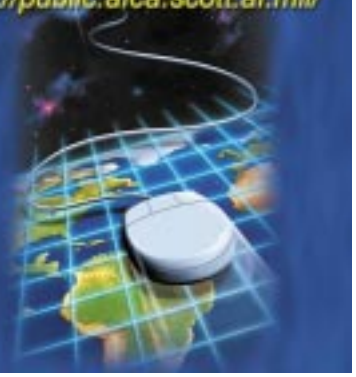


closing the book on the 20th century

information technology in action

in other news

About the cover

This month's issue focuses on some significant comm and info achievements over the past century.

Front and back covers by Al Moyers

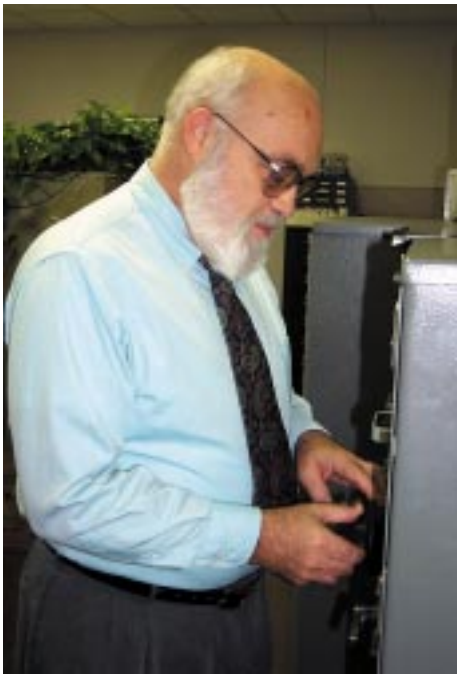
AFCA office captures history for entire AF comm and info community

SCOTT AFB, Ill. -- The Air Force Communications Agency History Office underwent some significant changes in September, when Col. Thomas J. Verbeck, AFCA commander, reestablished the function as a separate staff office reporting directly to him. History had previously served for seven years as a division of the AFCA Plans and Resources Directorate. At the same time, Colonel Verbeck changed the office's title to Air Force Communications and Information History Office to reflect the role that he wants the office to perform as the Air Force repository for the history of the communications and information community. The title change gave an official endorsement to what had been an informal understanding for several years.

Photos by Master Sgt. Edward Ferguson

From left: Dr. Larry Morrison, Al Moyers and Dr. Tom Snyder, Air Force Communications and Information historians, review Allied Force history documents.

The Air Force Communications and Information History Office has a staff of three professional historians with a total of several decades of experience in Air Force communications history. Dr. Tom Snyder has been the office's chief historian since 1978, except for eight years as command historian for Headquarters U.S. Air Forces in Europe. Dr. Larry Morrison has been with the organization since 1983, and Al Moyers joined the staff in 1995. All hold advanced degrees in history.



Dr. Larry Morrison secures materials in a safe.

The Air Force History Program originated in March 1942 to comply with a presidential order requiring each war agency to prepare an administrative record of its World War II activities. Nearly 60 years later, Air Force historians continue to maintain the official history of the Air Force and the program is generally acknowledged as one of the premier history programs in the world.

The current AFCA historians are part of this network and are mandated to do their part in preparing and preserving the official Air Force record of communications and information activities. Dr. Snyder, Dr. Morrison and Mr. Moyers provide a wide range of services to the communications and information community. They manage probably one of the finest collections of photos relating to Air Force communications history in the country. They answer requests for infor-

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Dr. Tom Snyder reviews documents.

HISTORY

From Page 3

mation. They research and write history-based products such as books, articles, background papers, briefings, oral histories and studies. They provide historical products and services for policy development, decision making, planning, professional development and heritage. They are more than just keepers of the heritage flame. They see themselves as enablers. They pride themselves in providing the historical record and perspective for Air Force communications and information professionals to know the past, understand the present and anticipate the future.

Prior to 1990, Air Force Communications Command, AFCA's predecessor organization, had a large and active history program that extended to the squadron level. At HQ AFCC and the communications divisions, the function was staffed with civilian professional historians, while at the squadron level, additional duty military historians prepared quarterly histories of unit activities. As one of the oldest commands in the Air Force, AFCC also had one of the most comprehensive historical collections. Its records contained all of the histories prepared by the organization's historians back to 1938, when the Army Airways Communications System, the predecessor of AFCC, was first established. The collection contained thousands of photos, interviews, books and documents. This collection still exists, but after the divestiture of AFCC's operations and maintenance mission and the transfer of its subordinate units to other organizations, the history function below the headquarters at Scott AFB was eliminated.

But this did not mean that the Air Force stopped coming to the AFCA History Office for information. Old habits are hard to break. Roughly 70 percent of the requests for historical information coming to the AFCA history office have originated outside the agency. Most come from the Air Staff and other Air Force organizations, especially the communications and information community. Aware of this, Colonel Verbeck wanted the office title to reflect that AFCA's historians do more than just support AFCA. The office supports the entire Air Force communications and information community.

Unfortunately, the demise of the subordinate history program in 1990 meant that the central historical collection at HQ AFCA ceased to receive any histories or source material from the field, and the AFCA History Office has found it increasingly difficult to respond to questions relating to the past 10 years. There was an increasing gap in the corporate memory of communications and information. Lt. Gen. William J. Donahue, then the Director of Air Force Communications and Information, recognized this danger. He tasked the History Office to document the role of communications support in Kosovo operations, but that did not solve the problem of documenting and preserving the history of everyday communications activities on a regular basis. To help correct this situation, Colonel Verbeck has further tasked his historians to establish procedures for tracking some of the key activities of the communications and information community so that they will continue to support the community as they have done since 1942 when the function was created.

Al Moyers pulls documents from the Air Force comm and info archives.

The mail must go through

By Dr. Thomas S. Snyder
Air Force Communications and Information History Office
Air Force Communications Agency
Scott AFB, Ill.

"Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their appointed rounds," as the old saying goes, but if you're part of the Air Force postal system you have to add "nor combat" to the statement. The military has long had a postal system to get mail to its service members. Whenever military personnel are overseas, whether permanently stationed or at a short-term deployed site, they have an APO address. This acronym originally meant Army Post Office and the use of the term predates World War II. In 1952, the term changed to mean either Army Post Office or Air Force Post Office, whichever was applicable. For most of the last 50 years, the relative importance of mail delivery to contingency locations and the procedures to do so changed little, but in recent years mail delivery has taken on a new importance.

Permanent overseas bases, such as Ramstein AB, Germany, have full service postal facilities which function as an extension of the United States Postal Service. These APOs account for about one percent of the USPS locations. In case of contingencies, the military routinely establishes short-term postal facilities at deployed locations.

Overseas air postal squadrons retain kits in storage in preparation for deployments to support a contingency. The Air Force has a complete listing of the equipment and supplies to be staged. Each command does it a little bit differently; but in general the bigger items, such as tents, breakdown tables, two-drawer safes, cases and scales, are in war reserve materiel storage locations. Expendable supplies, such as pens, pencils, forms and stamps — enough to fill about four footlockers — are requisitioned from local post offices before the postal team deploys. Basically the kits make up all the staples a team needs to run a postal operation.

Amn. William Gentry, 51st CS postal clerk, sorts mail into mailboxes at the Osan AB, Korea, post office.

Tech. Sgt. Christopher Pease, Detachment 2, PACAF Air Postal Squadron, keeps an eye on mail packages coming down a conveyor belt.

During a contingency, the normal procedure is for the postal squadron to pull the kits out, do an inventory, and plus them up with additional equipment needed to set up a field post office. The size of the deploying team depends on a couple of factors. First is the number of people at the deployed site. The rule of thumb is usually one postal clerk for every 500 or so people deployed. Another factor to consider is how the mail is getting there. Furthermore, if the postal detachment supports an airport with 24-hour operations, it takes a couple of extra people to work around the clock, to check each of the planes coming in, to be able to pull the mail off and secure it. Sometimes the deployed site is not collocated with the airport and extra manning is required to both man the post office and make runs to another location to pick up the mail.

If the contingency operation is in Europe, for example, mail enters the continent from the United States through six aerial mail terminals, the largest of which

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is at Rhein-Main AB, Germany. All mail coming from the United States into the Central Region of Europe flies into Rhein-Main where people at the aerial mail terminal sort the mail by the appropriate APO. It's then trucked to appropriate APOs in the Central Region. There is also an inner-network of commercial airlines and Air Mobility Command flights that the United States Air Forces in Europe uses to distribute mail throughout the theater. Depending on the contingency location, the mail is then distributed either by truck or by airlift, or a combination of both, to the deployed site.

Until recently, postal procedures had not changed significantly since World War II. They remained predominantly a manual operation that was seen as a quality of life issue. No real priority was placed on mail delivery. It had not been a deployment item; it was considered a sustainment issue for the morale of those deployed. As such, it was not seen as having an impact on the mission of an operation. During deployments, airlift is always at a premium and beans and bullets take priority over quality of life items. Even the baggage of the troops is phased in and mail in the past was always far down on the list of priorities. Postal clerks and their equipment would be sent down according to their place in the Time Phased Force and Deployment Data plan and mail would follow once the postal facility was operational. Most contingency plans were structured so that 30 days was the normal planning figure for setting up a fully operational APO, and then only if the deployment was going to last longer.

In recent deployments, however, people were being sent to places with very austere conditions and military planners came to realize that deployed troops needed care packages from home. Air Force planners recognized that if mail was sent in earlier, it could be used as part of the supply system as well. Spare parts, for example, could be sent this way, thus relieving some of the pressure on the military logistics system. Today, mail is no longer seen just as a source of cookies and letters from home. It is now accepted as a mission issue and the Air Force has taken steps to establish postal facilities at deployed sites earlier.

The goal now is to get the mail flowing as soon as possible and in recent deployments the time has been cut from the traditional 30 days after the first troops arrived to as few as seven days. This was possible in part because the deployment control centers gave transportation control numbers to the mail so that it had the same priority as baggage. Now if a plane has space for one pallet position on it today, it will go rather than wait for what would have been its place in the queue. If something does not show up and a load master needs something on short-notice to fill up a space, a pallet of mail is used as filler. The result is that mail now flows to people at deployed sites about as fast as they would

Tech. Sgt. Neil Mercader, of Detachment 2, Pacific Air Forces Air Postal Squadron, checks for proper markings on a package at Yokota AB, Japan.

get it if they were at a permanent base in that country. In fact, in recent deployments, personnel had better service at deployment sites because they had mail service seven days a week while most permanent bases offer mail service only six days a week.

Another recent change that has a potential for making mail delivery more timely is the way USPS allotted ZIP codes for deployment sites before Operation Allied Force. As already mentioned, the military postal system is an extension of USPS. To deliver mail, USPS must associate a ZIP code with a geographical location so that the mail can be properly tagged. The drawback was that military security regulations prevented disclosing the location of a site as long as the site was classified, and it usually remained classified until the planes arrived. This meant that the military postal unit could not ask USPS for a ZIP code number until after the location was declassified, further slowing down the flow of mail to the site.

Once the location was declassified, the service would apply through the Military Postal Service Agency in Alexandria, Va., for a ZIP code for the deployed site, justifying why that site needed a postal service and ZIP code. If there were six new deployment sites, then six requests with justifications had to be made. Once MPSA allotted the ZIP code, it then distributed the ZIP code and the site's geographical location in the next USPS postal bulletin to all United States post offices. Only then did mail start to flow to the deployed site. The problems with classification and requesting ZIP codes individually definitely slowed the process.

This situation somewhat abated in 1998 when the USAFE Air Postal Squadron asked for a block of 10 ZIP codes for Operation Allied Force locations in advance from MPSA rather than asking for them individually as needed. This was approved, thus allowing the Air Force to do its internal planning for a possible deployment site and put a ZIP code against it. Unfortunately, the classification issue remained a hurdle. Un-

til the site was declassified, the Air Force could still not release the address information. And until stateside post offices could associate a location with a five digit ZIP code, the mail could not begin to flow. Nevertheless, the block of 10 ZIP codes allowed the Air Force a head start in preparing for mail service and expedited the flow of mail.

Another change in operations centered on the location of the post office at the deployed site. For most of the last 50 years, deployment sites have been a U.S.-controlled site and the post office was placed where it was most accessible to personnel for receiving and delivering mail. Often the postal facility was a tent that required manning 24 hours a day to protect the facility's finances, stamps and the mail. Over the last 10 years, however, there has been an increasing number of deployments in which the sites were multi-national and U.S. operations were mixed with allied or host nation operations and personnel. A good example was the deployment to the international airport at Tirana, Albania, during Operation Allied Force. Steps are now taken to provide greater security for the postal facility. In more recent deployments the emphasis has shifted to providing the post office greater security by placing it in a more secure site, and building it as a walled structure with barred windows. Today a site preparation team tries to go out in advance to locate a suitable site where finances and registered items can be secured on a 24-hour basis without postal clerks bunking down in the facility.

But the most notable shift for Air Force postal clerks at the end of the 20th century was the growing dependence on automation. The contingency kits mentioned earlier were out of date. The Air Force originally built the kits for purely manual operation. While site commanders and other functional areas had rapidly embraced and grew dependent upon computers, the Internet, local area networks and e-mail, the postal system remained faithful to small 70-pound scales, some stamps and a stubby pencil. Computers did not find their way into contingency kits until the very end of the 20th century, even though all Air Force instructions, including postal instructions, were now on computers. Recent deployments proved that the post offices needed to be hooked up as much as any of the other functionals. The deployed postal clerk at the end of the century needed postal scanners, computers, laptops and access to local area networks, the Internet and e-mail.

In the past, the deployed postal clerk never knew what flight the mail was going to come in on. He or she met every flight when it hit the ground, so they could get the mail off. Unlike cargo, which can sit overnight and be escorted later, the mail is critical and has to be secured. Once planners remove the letter-class restriction for deployed sites, to try to hold mail to 16 ounce letters only, it opens the mail to all classes of mail, including registered mail. And with registered mail, you also get classified material and money. That drives the 24-hour coverage and the bunking in the post office unless the facility is secure. But when postal clerks have access to e-mail, they can be notified in advance when arriving planes actually have mail aboard, thereby reducing the workload and hours mail clerks have to work.

One would assume that with the widespread availability of e-mail, even at deployment sites, it would lessen the dependence on the postal system or "snail mail," as it's sometimes called. Recent deployments, however, indicate that the estimated two pounds per day per person that postal clerks plan on receiving did not significantly diminish. People take advantage of e-mail to order over the Internet from commercial companies and base exchanges. For example, at the height of operations in Tirana, Albania, during Operation Allied Force, mail delivery exceeded 10,000 pounds a day.

As the 20th century closed, the Air Force military postal system had made as many changes as other forms of Air Force communications. The Air Force now generally acknowledges mail delivery to be an important mission asset as well as a morale issue. It has set up procedures to get postal clerks and their equipment to deployed sites much faster than the traditional 30 days.

The procedure of allotting ZIP codes, so necessary for mail delivery, has been streamlined, even though the problem of dealing with sites until the location is declassified remains. It is now a given that modern technology is something that military postal clerks need to deploy with, and as a consequence, contingency kits now include such things as transportable scanners, computers and laptops. The Air Force postal system can truly say it's ready for bad weather and the demands of a modern battlefield.

(Dr. Snyder's article is based on an interview with Lt. Col. Ted D. Connally, Robert Eichholz, and Master Sgt. Joel S. Lee, former members of the USAFE Air Postal Squadron, conducted Feb. 14, 2000.)

Verna Wiggs, Base Information Transfer Center, Robins AFB, Ga., uses the voice-recognition program to sort mail quicker.

Desktop revolution pays dividends

By Neil Franklin
Standard Systems Group Historian
Maxwell AFB - Gunter Annex, Ala.

Most revolutions begin with a bang. Even those that don't generate a "shot heard round the world" rate at least a news bulletin. That wasn't the case with the Air Force's desktop revolution. Three major commands issued a joint Request for Proposal for more than 1,000 microcomputers in 1981. Other Air Force units began buying microcomputers and the proliferation of small systems began to generate problems with installation, maintenance, software and compatibility. In March 1982, Air Force headquarters directed the Air Force Communications Command to establish a Small Computer/ Office Automation Service Bureau.

The Z-100 Central Processing Unit hummed along with 5 megahertz, Random Access Memory of 192 kilobytes, two 5.25-inch floppy drives and a 12-inch monochrome monitor.

The task of creating a central source of expertise for small computers fell to the Air Force Data Systems Design Center (now called Headquarters Standard Systems Group). In May 1982, the bureau became the Air Force Small Computer/ Office Automation Service Organization and two months later, the Air Staff put the new team to work on developing specifications and drafting a RFP for physically small and low cost ($1,000-$5,000) microcomputers. Dr. Thomas Conrad, Deputy Assistant Secretary of the Air Force for Information Systems, had placed a moratorium on further purchases of microcomputers. The drive for automation was not blocked, but channeled to achieve standardization, compatibility and cost savings through larger buys.

At the time of AFSCOASO's birth, creating printed matter on paper was called typing. If you were really fortunate, your office had an IBM Selectric and plenty of correction ribbon. Desktop calculators were smaller than a breadbox but considerably larger than the cell phone now resting in your glove box or purse.

Within a nine-month period, AFSCOASO directed the evaluation of 32 separate vendor proposals. The Small Computer Requirements Contract was to be the first in a series of joint Air Force/ Navy standard requirements contracts. In October 1983, Zenith Data Systems captured the prize with its Z-100 computer. The Z-100 Central Processing Unit hummed along at 5 megahertz with Random Access Memory of 192 kilobytes, two 5.25-inch floppy drives and a 12-inch monochrome monitor. It cost $1,799. The original Delegation of Procurement Authority limited buys to 12,000 units over three years. Air Force and Navy customers exhausted the DPA in the first 12 months, but extensions were sought and approved. By July 1986, Air Force units had purchased more than 31,000 units through the SCRC.

The SCRC was a subtle approach to standardization that provided convenience instead of mandating compliance. Using the contract was easier than seeking a separate procurement. Service members moving from one base or command to another didn't require retraining. Software was transportable. As more of the Zenith boxes came to the Air Force, more users discovered the efficiency of word-processing and database manipulation. When they found an empty desktop, they lobbied their bosses to put a Zenith on it.

In 1984, the Air Force and Navy awarded a requirements contract for 30,000 TEMPEST (Control of Compromising Emanations from Message Processing Hardware) certified microcomputers. The following year, Federal Data Corporation won the competition for the Air Force/Navy portable computer contract. Although some users described the portable as a "luggable," demand for the product clearly indicated that service members were loath to leave their computing power at the office. The Lapheld I contract of 1987 provided the Zenith 184 and attracted thousands of buyers.

Zenith won the Follow-on Small Computer Requirements Contract in 1986. The Zenith 248 had more than double the CPU speed and RAM of the Z-100 and cost about $700 less than its predecessor. The Army and the Defense Logistics Agency joined the Air Force and

the Navy on this contract. When the contract expired in 1989, participating services/agencies had purchased more than 400,000 systems.

On July 1, 1986 the Standard Information Systems Center established a Directorate of Contracting at Gunter Air Force Station, Ala. This organizational change allowed a greater degree of collaboration between computer specialists and personnel with procurement expertise. The unit could also call upon the office of its Staff Judge Advocate, a component rapidly gaining experience in technology acquisition.

The success of the small computer requirements contracts attracted attention in a vendor community that was quick to protest awards to competitors. When the Air Force awarded the Desktop III contract to Unisys in November 1989, Zenith Data Systems protested the action. The award withstood the protest, but it was a harbinger of things to come. The November 1991 Desktop IV award was plagued by protests and ordering did not open until June 1993.

Desktop IV was a dual award. Two vendors competed for Desktop IV orders. Zenith and Government Technology Services, Incorporated vied for sales, dropping prices and enhancing their offerings through the addition of features and capability throughout the life of the contract. Having seen how protracted an acquisition could become, the Standard Systems Group began work on Desktop V in 1995. Hughes Data Systems and Zenith Data Systems took that award in 1996.

The dual award concept worked well for rapidly introducing technological advances available in the commercial market. Having vendors in continuous competition for sales brought prices down. However, the standard requirements contracts attracted protests that could extend the acquisition process, to the detriment of service members. The SSG was determined to shrink the acquisition cycle. In 1997 the staff examined a new tool: the Blanket Purchase Agreement. After gaining experience with the new procurement vehicle in obtaining Hewlett-Packard printers, the SSG concluded a BPA for microcomputers in 1998. In January 1999, the SSG announced its Information Technology Tools Strategy, employing the BPA to provide a broad range of products.

Over the 17 years since the award of the Small Computer Requirements Contract, desktops across the Department of Defense have supported a cavalcade of increasingly powerful microcomputers. The increasing speed and memory of these devices has provided users with worldwide communication, access to the vast resources of the World Wide Web and the ability to tap media outlets such as the Cable News Network and the Weather Channel.

The technology tools have allowed the services to do more with fewer personnel. The SSG has provided those tools at prices computer-buyers envy. The quiet revolution begun in 1983 has paid huge dividends and the revolutionaries at the SSG have lost none of their fervor for rapidly bringing their customers the best tools at the lowest prices.

Year	Computer	CPU speed	RAM	Hard Drive	Floppies	Monitor	Cost Then	Cost Now
1983	Desktop I Zenith 100	5MHz 8088	192K	None	Two 5.25 320K each	12" monochrome	$1,799	$3,107
1986	Desktop II Zenith 248	12MHz 80286	512K	None	Two 5.25 320K each	12.5" monochrome	$1,103	$1,731
1989	Desktop III Unisys PW816	16MHz 80386	2MB	40MB	3.5" 1.44MB	14" color	$865	$1,200
1993	DT IV-A Zenith	20MHz i486SX	4MB	115MB	5.25" 320K & 3.5" 1.44MB	14" color	$1,751	$2,084
1993	DT IV-B GTSI Everex	20MHz i386SX	2MB	106MB	5.25" 320K & 3.5" 1.44MB	14" color	$1,327	$1,580
1996	DT V Hughes Micron ClientPro	100MHz Pentium	12MB	850MB	3.5" 1.44MB	15" color	$2,179	$2,389
2000	IT2 BPA Micron ClientPro	600 MHz	64MB	4GB	3.5" 1.44MB 40XCD	15" color	$997	$997

Note: For Desktop I-V, systems shown are basic configuration. Specifications generally reflect the initial machine available on contract. The Micron ClientPro on the IT2 BPA was a monthly special advertised in June 2000.

*** Contract opened in 1997. Configuration shown offered in September 1998.**

Air Staff Chief Communicators

1947 - 2000

Maj. Gen. Francis L. Ankenbrandt
1947-1951
Director of Communications

Maj. Gen. Raymond C. Maude
1951-1953
Director of Communications

Maj. Gen. (later Lt. Gen.) Gordon A. Blake
1953-1956
Director of Communications ('53-'55)
Director of Communications-Electronics ('55-'56)

Maj. Gen. Alvin L. Pachynski
1956-1958
Director of Communications-Electronics

Maj. Gen. (later Lt. Gen.) Harold W. Grant
1958-1961
Director of Communications-Electronics ('58-'60)
Director of Telecommunications ('60-'61)

Maj. Gen. John B. Bestic
1961-1962
Director of Telecommunications

Maj. Gen. J. Francis Taylor Jr.
1962-1965
Director of Command, Control and Communications

Maj. Gen. (later Lt. Gen.) Gordon T. Gould Jr.
1965-1971
Director of Command, Control and Communications

Maj. Gen. (later Lt. Gen.) Lee M. Paschall
1971-1974
Director of Command, Control and Communications

Maj. Gen. Robert L. Edge
1974-1977
Director of Command, Control and Communications ('74-'75)
Asst. Chief of Staff for Communications and Computer Resources ('75-'77)

Maj. Gen. (later Gen.) Robert T. Herres
1977-1979
Asst. Chief of Staff for Communications and Computer Resources ('77-'78)
Director of Command, Control and Communications ('78-'79)

Maj. Gen.
William G. MacLaren Jr.
1979-1981
Director of Command and Control and Telecommunications

Maj. Gen.
Gerald L. Prather
1981-1984
Director of Command and Control and Telecommunications ('81-'83)
Asst. Chief of Staff for Information Systems ('83-'84)

Maj. Gen.
John T. Stihl
1984-1986
Asst. Chief of Staff for Information Systems ('84-'86)
Asst. Chief of Staff for Systems for Command, Control, Communications and Computers ('86)

Maj. Gen. (later Lt. Gen.)
Robert H. Ludwig
1986-1989 1990-1992
Asst. Chief of Staff for Systems for Command, Control, Communications and Computers ('86-'89)
Deputy Chief of Staff for Command, Control, Communications and Computers ('90-'92)

Brig. Gen. (later Lt. Gen.)
Albert J. Edmonds
1989-1990
Asst. Chief of Staff for Systems for Command, Control, Communications and Computers

Lt. Gen.
Carl G. O'Berry
1992-1995
Deputy Chief of Staff for Command, Control, Communications and Computers

Lt. Gen.
John S. Fairfield
1995-1996
Deputy Chief of Staff for Command, Control, Communications and Computers ('95-'96)
Deputy Chief of Staff for Comm and Info ('96)

Lt. Gen.
William J. Donahue
1996-2000
Deputy Chief of Staff for Communications and Information ('96-'97)
Director of Communications and Information ('97-'00)

Lt. Gen.
John L. Woodward Jr.
2000-Present
Director of Communications and Information (May-Sept.)
Deputy Chief of Staff for Communications and Information (Oct.-Present)

The First Chief

Col. Clarence C. Culver

"American [radio] apparatus demonstrated as being superior to foreign apparatus, sailed from France on return journey, January 1918."

From then Major Culver's Personal Report - Officers, *January 1918.*

Colonel Culver operates radio-telephony equipment.

By Al Moyers
Air Force Communications and Information History Office
Air Force Communications Agency
Scott AFB, Ill.

Col. Clarence C. Culver can arguably be considered the original Air Staff chief communicator. Our records of his military career are incomplete, but we do know that his career as an aviation and air communications officer spanned nearly three decades, when the fields of both military aviation and air communications were in their infancy.

Colonel Culver began his Army career as a cavalry officer. By 1910, a year after the Army bought its first plane, he was on detached duty with the U.S. Army

Signal Corps. Colonel Culver was among the earliest to become instrumental in the development of aviation radio.

On Aug. 27, 1910, at the Sheepshead Bay, N.Y., airshow, he recorded the first communications from an airplane in flight. H.M. Horton is credited with building the transmitter that was installed in the aircraft, piloted by J.A.D. Macready, from which the first message was transmitted. Colonel Culver copied the message at the radio receiver he constructed and had positioned atop the Sheepshead Bay racetrack grandstand. Reportedly the message Colonel Culver recorded was, "Another chapter in aerial achievement is hereby written in the receiving of this first message ever recorded from an airplane in flight."

Col. Clarence C. Culver (second from left) demonstrates radio-telephony for President Woodrow Wilson.

By mid-1915, Colonel Culver held the position of chief aviation radio engineer in the Office of the Chief Signal Officer. This marked the first instance of an office that can be traced to the Air Staff's current Deputy Chief of Staff for Communications and Information.

In June 1915, Capt. A. S. Cowan, head of the Army's flying school at San Diego, Calif., recommended to the Chief Signal Officer that an officer competent to conduct the needed experimentation in aircraft radio telegraphy should be assigned to the school. At that time the San Diego school was at the center of most aviation development activities for the Army. Colonel Culver reported to the school in the autumn of 1915 and took charge of the school's radio work as the meteorological and communications officer. However, the records of the time indicate that his position in the Office of the Chief Signal Officer was held for his return.

One of Colonel Culver's initial projects at the school was development of an aircraft radio transmitter, the Signal Corps Radio-51. The first successful tests on the project were conducted in the spring of 1916 and by the following summer and autumn major developments in aircraft radio were made.

On July 27, 1916, while flying with enlisted pilot Sergeant William C. Ocker, Colonel Culver transmitted voice messages over a distance of 111 miles from Santa Monica, Calif., to San Diego. On Sept. 2, he operated one of the radio sets that made the first plane-to-plane transmissions. On Oct. 26, Colonel Culver set a new transmission distance record when the message he sent from his aircraft was received 140 miles away.

Early in 1916, Captain Cowan recommended Colonel Culver be authorized flight pay as his duties required him to perform frequent and regular flight duties at the flying school, much the same as the pilots. The Office of the Chief Signal Officer denied the request stating that legislation prohibited the authorization of flight pay to anyone but pilots. However, the Chief Signal Officer authorized Colonel Culver to be admitted to pilot training in December 1916. He earned his private pilot's license in April 1917 and his Army wings in July 1917.

Colonel Culver soon returned to his post in Washington. During his absence from the Office of the Chief Signal Officer, the office had undergone several reorganizations, but seemingly, Colonel Culver's position was always held for him. In April 1917, while he was still in pilot training, he was appointed chief radio engineer in the Materiel Branch of the Aeronautical Division of the Office of the Chief Signal Officer.

In October 1917, Colonel Culver was temporarily assigned with the American Expeditionary Force in France to learn about the latest aircraft radio technologies being employed by the various combatants in what was then termed "The Great War." He took the latest in American aircraft radio technology with him to France. He annotated his monthly report for January 1918, "Flights made at testing field in France. Object of trip abroad, namely, to investigate foreign aero-ra-

See **CULVER** Page 14

Col. Clarence C. Culver and Brig. Gen. William "Billy" Mitchell converse at the 1921 bombing trials.

of leadership within the Air Service and, in January 1922, reported to the Army War College.

Upon completion of the school in the summer of 1922, he was assigned as Air Officer for the Army's 8th Corps Area, headquartered at Fort Sam Houston, near San Antonio, Texas. In April 1925, Colonel Culver transferred to nearby Kelly Field as post commander and commandant of the Air Service's advanced flying school.

In September 1926, he became post commander at Langley Field, Va., as well as commander of the 2nd Wing and commandant of the Air Corps Tactical School.

Colonel Culver returned to Washington in August 1929 as the chief of the Air Section in the War Department. He again assumed command of Langley Field in July 1932. He simultaneously commanded the 1st Bomb Brigade and the 2nd Bomb Wing.

As the first chief air communicator, Colonel Culver and his generation of fellow communicators had to overcome not only the technical limitations of their era, but perhaps more importantly, the mindset of early aviators who regarded communications as a generally unnecessary intrusion into the cockpit. Through their innovation and forethought, communications and the rapid flow of information has become essential to modern airpower operations.

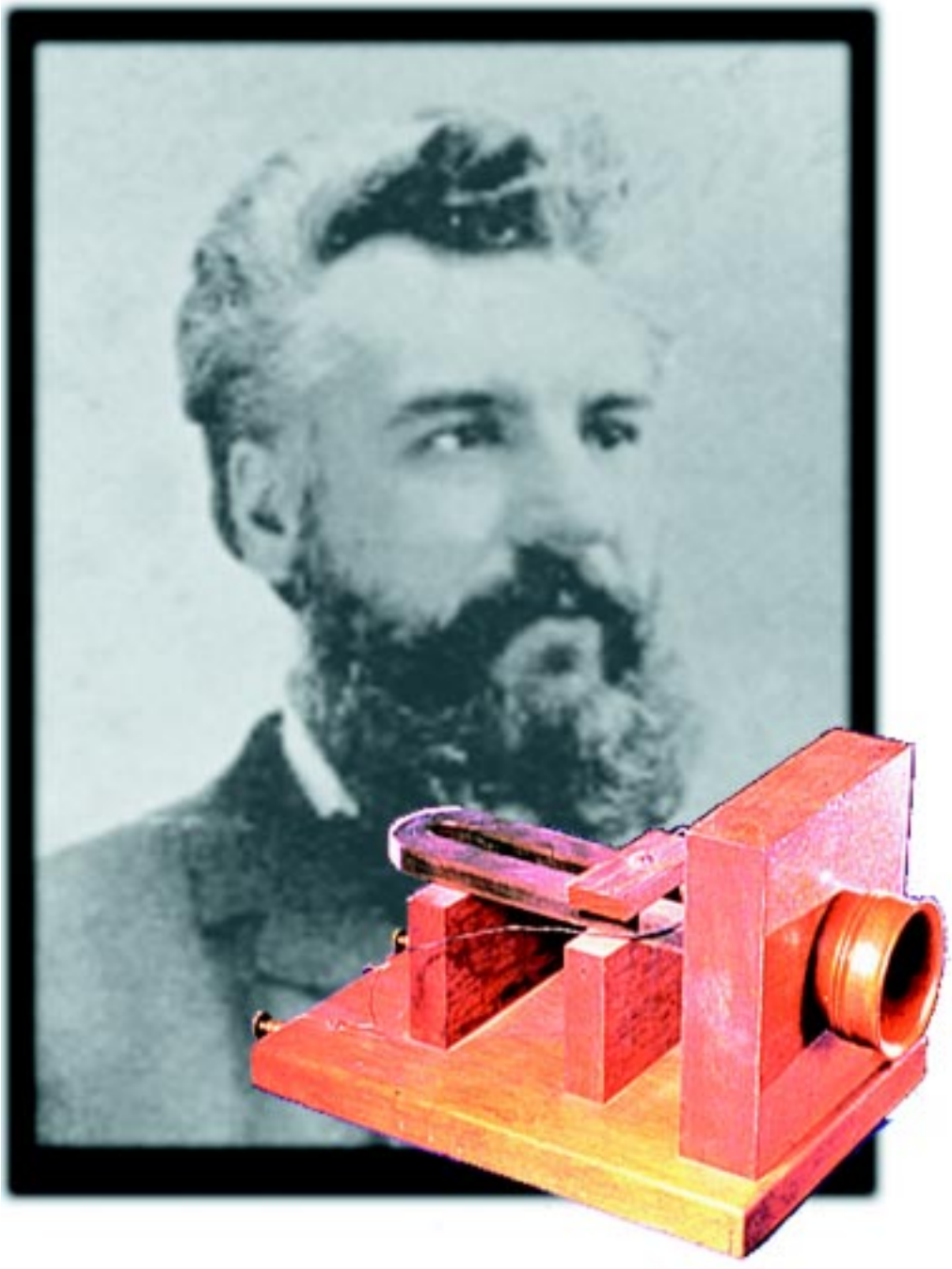
CULVER

From Page 13

dio apparatus and demonstrate comparative value of American apparatus and to determine course for future development."

Colonel Culver returned from France in 1918 to head what became the communications division of the Army Air Service. He soon advanced to another level

MOBILE TELEPHONY
becomes personal communications



On March 7, 1876, Alexander Graham Bell received a patent for his telephone. Two years later, Mr. Bell set up the first public telephone exchange in New Haven, Conn.

The U.S. military services quickly adopted Mr. Bell's telephone and by 1892 more than half of the Army's posts were equipped with telephones.

By Al Moyers
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In the 20th century, the technology associated with the "electrical speech machine," as Alexander Graham Bell reportedly first called his invention, progressed exponentially from a tethered novelty to a pocket-sized necessity.

With the development of "wireless," or radio, technology during the first part of the 20th century, the possibility of mobile telephony became a reality. In 1929, AT&T, incorporated by Bell's American Bell Telephone Company in 1885, opened the first public ship-

See **TELEPHONY** Page 16

TELEPHONY

From Page 15

to-shore telephone service onboard the *S.S. Leviathan*. Southwestern Bell telephone company began the nation's first land-mobile commercial telephone service in St. Louis, Mo., on June 17, 1946. That same year, engineers at Bell Laboratories were already preparing for the next revolution in mobile telephony—cellular grid of low-power transmitters to replace the single, centrally-located, high-power transmitter systems then servicing mobile telephone subscribers.

On Oct. 13, 1983, AT&T officially began the first cellular telephone service in what the Federal Communications Commission termed the Chicago metropolitan statistical area. AT&T first petitioned the FCC in 1971 to consider the cellular system as a more efficient means of providing mobile telephone service. In 1974, after studying the proposal, the FCC granted 40 MHz of the frequency spectrum—825-845 MHz for base stations and 870-890 MHz for mobile sets—to investigate cellular telephony.

The FCC granted two experimental cellular licenses in 1977. It gave AT&T permission to develop a cellular system for Chicago, and it authorized American Radio Telephone Service to test a system in the Washington-Baltimore metropolitan area. In an effort to foster the development of a national system, the FCC required the ARTS system to be compatible with the AT&T Advanced Mobile Phone Service.

In its 1981 rules for commercial cellular service, the FCC set aside the available radio spectrum in two blocks to provide competition within each market area. One block of the available spectrum was to be licensed to the local wireline telephone company. The second block of channels was to be licensed to a non-wireline or radio common carrier.

Pacific Bell Mobile Services debuted its new Personal Communications System Network on Oct. 29, 1996, in San Diego, Calif. PCS represented the next major milestone in mobile telephony. Pacific Bell Mobile Services' president and chief executive officer, Lyndon R. Daniels, proclaimed, "PCS is what cellular should have been." Unlike the existing analog cellular or hybrid digital cellular systems, PCS is, as the announcement reported, a "100 percent pure" digital system. The proponents of PCS argued that it should be viewed as distinctly different from cellular service.

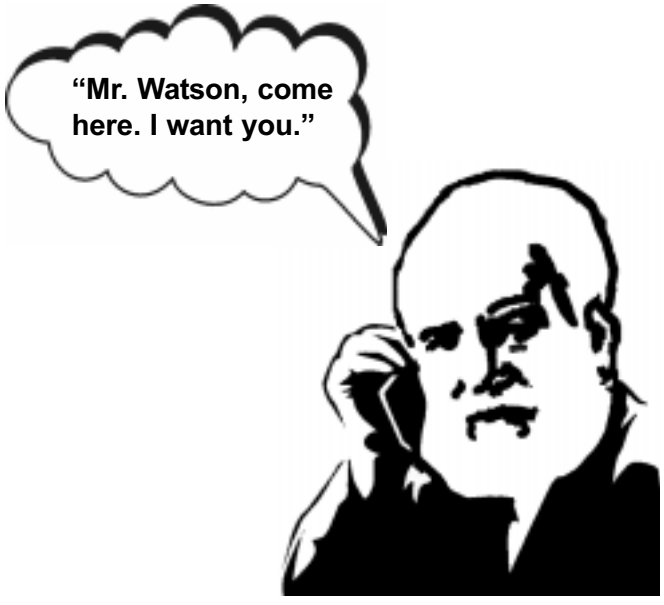
The FCC first authorized a PCS frequency band—1850-2200 MHz—on Sept. 23, 1993, for "emerging technologies." In 1994, the FCC allocated a narrower 120 MHz block—1850-1990 MHz—for broadband PCS and began the process to auction specific frequencies to commercial service providers. The potential of PCS was evident in the FCC's allocation of more than three times the frequency spectrum it had given cellular licensees.

The essence of PCS was personal communications tailoring. PCS subscribers had a variety of services from which to customize their particular needs: voice mail, news services, caller identification, paging, data transfer, and more. The digital technology employed in the PCS network facilitated this variety of offerings. Moreover, PCS customers could use their voice and data options simultaneously without interfering with either one because of the landline quality of PCS mobile digital signaling.

The future of PCS is the truly personal communications capabilities inherent in the Subscriber Identity Module card. The SIM card contains the subscriber's personal information and is removable from the handset so that billing is directed towards the actual user rather than the owner of a particular handset. With a personalized SIM card, a customer will be able to use any PCS handset, eventually anywhere, to send or receive a pre-selected number of enhanced voice and data service features.

By the year 2000, more than 500 million subscribers were using cellular and Personal Communications System services. Industry experts predict that by 2010 there will be more than 1.45 billion subscribers. They further estimate that by that time the number of wireless users will outnumber wireline customers.

Wireless telephony is a clear example of how technology rapidly evolved in the 20th century. Air Force communicators have applied much of that technology to the increased need for rapid information exchange. Although the technology associated with Personal Communications Systems remained in a state of flux at the close of the 20th century, Air Force managers envisioned a greater dependence on such commercial off-the-shelf technologies to meet expanding mission requirements. These managers predict that as the global infrastructure matures, "commercial cellular/PCS systems are destined to become the primary personal communications medium [of Air Force personnel] worldwide."



20th century communications timeline

1903 *Dec. 17* – Wright Brothers made first sustained, controlled, powered airplane flight at Kitty Hawk, N.C.

1906 Automatic dial telephone switching invented.

1907 Bell and Howell developed a film projection system.

1908 *Feb. 10* – First Army airplane contract signed with Wright Brothers.

1910 *Aug. 27* – First radio message from an airplane in flight. Capt. Clarence C. Culver, of the Aeronautical Division, set up a receiver in the grandstand of the Sheepshead Bay Racetrack in New York and picked up an overhead airplane message as it was tapped out by James A. Macready.

1911 *Jan. 16* – First photo-reconnaissance flight.
Apr. 11 – U.S. Army's first permanent flying school inaugurated.

1914 *Dec. 11* – First ground-to-air messages were received in an airplane from a station 10 miles away. Lt. J. O. Mauborgne designed a set which received a message transmitted from a Corregidor station in the Philippines to a Burgess-Wright airplane as it flew over Manila.
Dec. 16 – Two-way radio telegraphy between the air and ground was first demonstrated by Lieutenants H. A. Dargue and J. O. Mauborgne as they flew a Burgess-Wright airplane in the Philippines.

1915 *Jan. 25* – First transcontinental telephone call — took 23 minutes to set up and cost $20.70 for first three minutes.
Sept. 2 – Plane-to-plane radio was demonstrated at North Island, San Diego, when radio-telegraph messages were sent and received at a distance of approximately two miles.

1916 Radio tuner invented.

1917 *Feb. 28* – First radio-telephone plane-to-ground voice transmission in United States.
Multiplexing combined two or more voice channels on one wire.

1918 *March 19* – Congress passes the U.S. Standard Time Act, authorizing the Interstate Commerce Commission to establish standard time zones for the country.

1920 First radio broadcasting stations started.

1921 *Nov. 12* – First aerial refueling -- E.S. Daugherty transferred planes with a can of gasoline.

1922 *Feb. 8* – President Harding installed first radio in White House.

1923 A picture, broken into dots, was sent by wire.

1926 National radio network, NBC, is formed.
Robert Goddard launched first liquid-fueled rocket.
March 7 – First successful trans-Atlantic radio-telephone conversation, between New York and London.

1927 Philo Farnsworth assembled a complete electronic television system.
May 21– Charles A. Lindbergh completed the first solo flight across Atlantic without any type of radio.

1928 Russian immigrant to U.S., Vladimir Zworykin, patented the cathode ray tube.

1929 Telephone first placed on President's desk.
Aug . 24 – Lt. James Doolittle made the first blind, all-instrument flight.

1935 IBM's first electric typewriter came off the assembly line.
First around-the-world telephone call made.

1936 *June 7* – First all instrument trans-continental flight completed.

1939 Regular television broadcasts began.
October – Professor John T. Atanasoff and graduate student Clifford Berry designed first automatic digital computer, the Atanasoff-Berry Computer.

1940 First color television broadcasts.

1941 NBC and CBS started commercial television transmission.
Dec. 7 – Japanese attack on Pearl Harbor.

1945 *Aug. 6* – Atomic bomb dropped on Hiroshima.

1946 University of Pennsylvania's ENIAC heralded the modern electronic computer.
Jan. 10 – Scientists at the Evans Laboratory succeeded in bouncing a radar signal off the moon.

1947 *July 26* – President Harry S. Truman signed the National Security Act of 1947, establishing the U.S. Air Force and transferring the Army Air Forces to the USAF.
Sept. 18 – U.S. Air Force began functioning as an independent service when Stuart Symington was sworn in as the first Secretary of the Air Force.
Dec. 23 – Transistor invented by William B. Shockley with John Bardeen and Walter Brattain.

1948 Land's Polaroid Camera introduced.

1949 Magnetic core computer memory invented.
May 11 – Berlin Airlift officially ended.

1950 *June 25* – North Korean Communist forces invaded South Korea.

1951 *June 14* – UNIVAC I (UNIVersal Automatic Computer), the world's first commercial computer, was unveiled at Philadelphia for U.S. Census Bureau.

1952 Telephone area codes debuted.
Feb. 1 – Air Force acquired its first general purpose computer, a UNIVAC I. It required over 5,000 vacuum tubes arranged in a rectangular frame about 10 feet wide, 14 feet long, and 9 feet high.
March 3 – First test of Very High Frequency propagation using ionospheric forward scatter techniques.

1953 First high speed printer developed by Remington-Rand for use with UNIVAC computer.

1954 FORTRAN computer language invented by John Backus of IBM.

1955 First fiber optics appeared.

1957 Centronics introduced first dot matrix printer.
Oct. 4 – Space age began when the Soviet Union launched Sputnik I, the world's first artificial satellite.

1958 Seymour Cray built first fully transistorized super computer for Control Data Corporation.
Data first sent over telephone lines.
Jan. 31 – First successful launch of a U.S. satellite, Explorer I.
Dec. 19 – First human voice beamed from space from Project SCORE.

See TIMELINE Page 20

20th Century Communications Timeline

1901 – First trans-Atlantic radio transmission.

Nov. 15, 1938 – Creation of Army Airways Communications System. (Photo of AACS operating room.)

Nov. 5, 1912 – At Fort Riley, Kan., for the first time in U.S. history artillery adjustments were directed from an airplane using radio-telegraph. Army Lt. Henry A. Arnold was the pilot and Navy Lt. Follett Bradley was the observer.

1945 – By the end of World War II, AACS had built a global military communications system.

1928 – Teletype invented. It became common in Air Force communications centers.

July 17, 1950 – HQ USAF directed the implementation of the Air Force Global Communications System to "provide the minimum point-to-point and long-range ground/air communications required to support global air operations." (Photo of GLOBECOM torn-tape relay center.)

(Information provided by Dr. Larry Morrison, Air Force Communications and Information History Office)

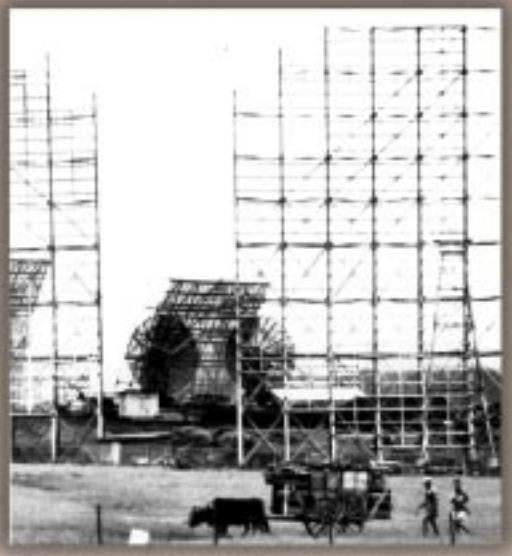
1900 1905 1910 1915 1920 1925 1930 1935 1940 194

May 9, 1960 – Air Force's network of 10 fully automatic relay centers (Plan 55) for handling common long haul communications was completed with the cutover of the last station, Siegelbach, Germany, into the system.

Sept. 4-21, 1962 – After a major earthquake in Iran, the United States provided airlift disaster assistance. Using a specially equipped C-130 aircraft called "Talking Bird," Air Force Communications Service's 2nd Mobile Communications Squadron provided airborne and initial on-site communications.

June 22, 1982 – Hammer ACE, the Air Force's adaptive communications element, was established to support activities such as aircraft accidents, exercises, quick communications restoral, and real world contingencies.

Feb. 15, 1999 – 1st Combat Comm Group personnel deploy to Cervia AB, Italy, in support of Operation Allied Force.



1966 – Tropospheric scatter communications system, such as this at Pleiku AB, Republic of Vietnam, supported U.S. forces in Southeast Asia.

Aug. 7, 1990 — First American forces arrive in Saudi Arabia as Desert Shield begins. At the height of Desert Storm operations, the communications systems supported 700,000 telephone calls and 152,000 messages daily, and communicators managed 30,000 radio frequencies.

1950 1955 1960 1965 1970 1975 1980 1985 1990 1995

TIMELINE from page 17

1959 Jack S. Kirby, Texas Instruments, patented first integrated circuit.
First plain paper Xerox copier appeared.
Feb. 6 – USAF successfully launched first Titan ICBM.
Aug. 7 – First intercontinental voice relay by satellite.

1960 Removable computer disks first appeared.
April 1 – TIROS 1, the first experimental weather satellite, launched.
April 12 – First U.S. communications satellite, Echo I, launched.

1961 FCC approved FM stereo broadcasting.
July 1 – Redesignation of AACS as Air Force Communications Service.

1962 *July 10* – Telstar satellite transmitted first trans-Atlantic television broadcast.
Oct. 14 – Air Force reconnaissance flight proved existence of Soviet IRBMs in Cuba.
Oct. 20 – Distant Early Warning radar system to warn U.S. of incoming Soviet missiles completed.
Oct. 25 -- First live two-way radio broadcast via Telestar satellite conducted.

1963 U.S. postal ZIP codes introduced.
Feb. 27 – Automatic Digital Network fully operational.
July 26 -- World's first geosynchronous satellite, SYNCOM II, was placed in orbit. "Parked" over the Atlantic, it provided telephone, teletype, and photo facsimile communications between U.S. and Africa.
Aug. 30 – Hotline between Washington and Moscow opened.
Nov. 18 – Touch-tone telephones introduced.

1965 Satellites began transmitting television signals.
Sept. 10 – Air Force Defense Meteorological Satellite Program weather satellite launched.

1966 Texas Instruments offered the first solid-state handheld calculator.
April 6 – Air Force Avionics Laboratory conducted first successful voice communications using an airplane (C-121), satellite (SYSCOM III), and ground equipment.

1967 Pre-recorded movies on video sold for home use.
July 1 – First USAF satellite terminal, an AN/MSC-46, placed in operation at Clark AB, Philippines.

1968 ASCII standard introduced.

1969 BASIC (Beginners All-purpose Symbolic Instruction Language) created by Tom Kurtz and John Kemeny, of Dartmouth University.

1970 *March 15* -- Overseas portion of the worldwide AUTOVON system completed.

1971 *November* – Intel Corp. launched the first microprocessor, "a computer on a chip."

1972 First electronic mail delivery between two computers.
"Pong" introduced and started video game craze.

1975 Micro-computer (kit form) reached U.S. home market.
Microsoft founded.

1976 Apple I computer introduced.
Feb. 22 – First test satellite in Air Force NAVSTAR Global Positioning System launched into orbit.

1979 *May 22* – Air Force Satellite Communications System achieved initial operational capability.
Nov. 4 – Iranian militants seized U.S. Embassy in Teheran.

1980 Sony Walkman tape-player introduced.
Ted Turner introduced Cable News Network, a 24-hour television news channel.
May 14 – First Air Force Automated Message Processing Exchange opened at MacDill AFB, Fla.

1981 Laptop computer introduced by Radio Shack.
First mouse point device introduced.
April 12 – First launch of U.S. Space Shuttle.
Aug. 3 – Unionized Federal Aviation Administration air traffic controllers began a nationwide strike. Air Force Communications Command air traffic controllers were immediately alerted according to previous contingency plans. Eventually 612 AFCC controllers would deploy to 138 locations.
Aug. 12 – IBM launched the original PC, based on Intel's 8088 processor, with two floppy disk drives and a monochrome monitor. It cost about $3,200.

1982 *Aug. 24* – The Modified Final Judgment, handed down by District Court Judge Harold H. Greene, established the procedures by which the 22 Bell Operating Companies would be divested from AT&T.

1983 *June 1* – HQ USAF reorganized to merge communications-electronics with data automation, creating an Assistant Chief of Staff for Information Systems.
Oct. 13 – AT&T inaugurated the first commercial U.S. cellular-mobile telephone system.
Dec. 1 -- Communications and data automation merged at unit level in the Air Force for the first time.

1984 Camera and tape deck combined to create portable camcorder.
Jan. 5 – Air Force Vice Chief of Staff, Gen. Larry D. Welch, directed the integration of communications, data automation, and office automation throughout the Air Force.

1985 *April 30* – Merger of telecommunications center operations, automatic digital switch operations, and computer operations into a single career field, information systems operations.
Microsoft Corp. introduced Windows 1.0.

1988 Fiber optic trans-Atlantic cable laid.

1989 *Nov. 9* – Fall of Berlin Wall (free passage allowed by East Germany).

1990 *Aug. 7* – Operation Desert Shield began. First American forces arrived in Saudi Arabia.

1991 *Jan. 17* -- Operation Desert Storm began when American, British, Saudi Arabian and Free Kuwaiti air forces started striking targets in Iraq and Kuwait.

1993 World Wide Web went public with more than one million hosts.

1995 *Dec. 6* – First airmen arrived in Tuzla, Bosnia, preparing airfield for some of the U.S. and NATO troops who would enforce the peace accord reached at Wright-Patterson AFB, Ohio.

1996 *June 13* – AFC4A redesignated Air Force Communications Agency.

1997 *April 1* – Air Force Communications and Information Center activated.

1999 *Feb. 5* – Twelve members of 1st Combat Comm. Sq. deployed to Rambouillet, France, to provide comm support for Kosovo peace negotiations.

2000 *June 7* – District Court Judge Thomas P. Jackson ordered Microsoft Corp. to split into two companies.
Oct. 1 – Air Force Communications and Information Center inactivated. Air Force Directorate of Communications and Information redesignated Deputy Chief of Staff for Communications and Information.

PACAF's C2 Web Based Warfighter

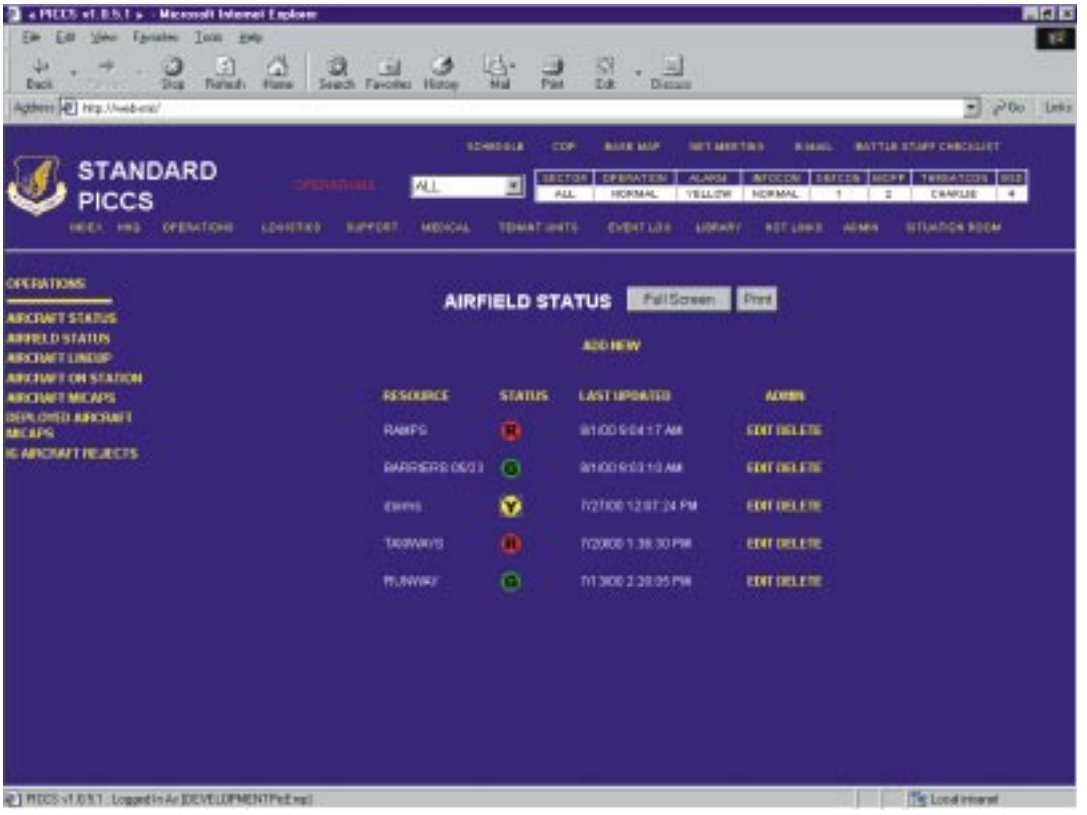
By Lt. Col. David Shultz
and **Senior Master Sgt. Debbie Taylor**
Headquarters Pacific Air Forces
Hickam AFB, Hawaii

Everyone has heard the expression, "Every cloud has a silver lining." The cloud, in this case, was the Y2K crisis. For Pacific Air Forces, the silver lining was its warfighters. PACAF needed a solution for a legacy command and control system that was not Y2K compliant. The original solution could not make the Y2K cutoff. HQ PACAF stepped up as a team to save the day.

The formula for success started with the users themselves. HQ PACAF held several working group meetings with users from across the command and visited many bases to fully capture user requirements and opinions. The resulting suggestions and ideas formed the baseline for the PACAF Interim Command and Control System. Throughout the development process, users at the PACAF wings supplied vital input. This team effort enabled PICCS to become PACAF's wing-level C2 system of choice. Wing-level involvement will continue as PICCS matures.

PICCS is an automated, secure, distributed wing-level command and control system that provides wing commanders and their battle staffs with timely and

See **C2** Page 23



PACAF Interim Command and Control System

Andersen's award-winning NCC shop changes to keep up with mission

Communications and Information Directorate
Headquarters Pacific Air Forces
Hickam AFB, Hawaii

This time last year, everything was different. But at a short tour base, it's supposed to be that way, right? The people definitely change, but the way of doing business? This time last year the tiny Network Control Center at the 36th Communications Squadron at Andersen AFB, Guam, was trying to do everything and doing a pretty good job of it. They had just won the 1998 General Edwin W. Rawlings Award as the Best Small NCC in the Air Force. Why would they need to change?

The mission changed, and the number of people doing it changed. Ever so slightly the 3C0 staffing decreased into the low 70 percent range, while the computer savvy needs of the wing increased. With a computer on virtually every desktop, and users who knew how to use them, we needed a 24-hour help desk. With users on line at all hours of the day, we needed a 24-hour network infrastructure and server section. With network security upgrades becoming a regular occurrence we also needed a dedicated section for that and a small task force to deploy the updates basewide. Add training for users and technicians and the requirements became greater than we had people or hours in a day.

Our little NCC only had a handful of help desk technicians -- actually less than a full hand. Our server shop and network infrastructure shop were at similar levels. We did have a small crew of dispatch technicians to install hardware and software, but more on that later. The largest shop we had was the base message center, but they were a 24-hour section and were also handling the base switchboard. Besides, they were already working 12-hour shifts due to staffing levels. Actually, everybody was working 12-hour shifts just to keep up with the workload. There was only enough people for one shift.

We tried all kinds of efficiency tricks, mostly based around using the servers to "push" our workload out to the base. The problem with that was it was broad brush approach that assumed all machines were equal. Often we had to go out and undo our "push" to get users back on line. We often spent a lot of time planning these "pushes" and the users were usually oblivious to what was happening. It worked, but it wasn't efficient. Our tiny NCC was trying to do it all, and all by itself. And the Defense Messaging System was coming with its increased server and workstation workload.

But something came up that saved us. That something was the Operationalizing and Professionalizing the Network Web site. On that Web site we found the Position Certification Guides, the Master Training Task List and Volume 2 of AFI 33-115 in all their draft variations. Those documents, while not final, laid out plans for training all our duty positions in a standard man-

See **NCC** next page

Work group manager training area in records management.

C2

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accurate information for effective decision-making during exercises, contingencies and war. The objective of PICCS is to increase capability by providing the wing commander and staff with a composite picture of the wing's resources.

PICCS requires no increase in system administration manpower compared to the originally planned system, which called for a large increase, because PICCS is easy to use and has reduced hardware requirements. The PICCS client/server suite consists of inexpensive PCs and NT servers. The original system configuration required UNIX servers and workstations.

PICCS is composed of three basic components that satisfy the primary requirements for a wing-level C2 system:

* Tactical Aircrew Scheduling and Airspace Management System is a commercial off-the-shelf aircraft scheduling tool tailored to fit the needs of PACAF wings.

* A Microsoft Access database, with a Web-based user interface, reports status for the battle staff and provides resource management and various links to the Common Operational Picture, the base map, a collaborative tool and a scheduler.

* Defense Message System provides SIPRNET connectivity and secure e-mail.

PICCS rides on the classified network to support real world events and parsing of air tasking orders and integrated tasking orders.

PICCS evolved from Microsoft PowerPoint slides, Excel spreadsheets, and Word documents linked to a Web page for resource management into an Access database with a Web input/output capability. Our future roadmap to fully mature PICCS into an even better C2 tool for the warfighter is to continue the spiral development philosophy, adding more capability to the baseline incrementally with continuous dialogue between HQ PACAF and the end users.

PICCS is the standard system for PACAF wing-level C2 at Misawa AB and Kadena AB, Japan; Osan AB and Kunsan AB, Korea; and Elmendorf AFB and Eielson AFB, Alaska. The other three PACAF wings at Yokota AB, Japan; Andersen AFB, Guam; and Hickam AFB, Hawaii, anticipate receiving PICCS some time during FY 2001 through FY 2003.

Other major commands – including Air Force Special Operations Command, U.S. Air Forces in Europe, and Air Combat Command – are evaluating PICCS (with involvement of the Aerospace Command and Control, Intelligence, Surveillance and Reconnaissance Center) for even greater use of this system outside PACAF. PICCS could rapidly evolve into the Combat Air Forces C2 system of choice for wing-level C2.

PICCS was developed by the warfighter, for the warfighter. HQ PACAF PICCS developers, with intricate support from users at PACAF wings, did an outstanding job providing the warfighter with an effective C2 tool.

NCC

from previous page

ner. And most importantly, it introduced the vital role of the Workgroup Manager.

The WGM was the missing link we were looking for. With 3A0 staff levels near 100 percent basewide and an itemized list of skills they should possess, we began to market our need for this manpower. We produced a CD ROM with all the required WGM Computer Based Training courses and documentation. We got the attention of a 3A0 senior NCO in Records Management, Master Sgt. Julie Malate, who quickly offered her crew of 3A0 technicians. Before long, they became fixtures in the NCC and took over Webmastering, training and all onsite small computer work.

Remember our small crew of dispatch technicians? They became absorbed into the Helpdesk and we were now able to send our technicians to needed training courses. But what about our other little shops? How did the O/PTN help us there? By showing us how to combine our existing forces.

The PCG and MTTL didn't mention training our Message Center. That's our biggest shop, and we had nothing to apply to them. What we did sounded a little odd at first, but it worked for us. We packed up our entire help desk and moved it to the Message Center. Then we made the whole operation 24-hours and our new help desk was born. With more staff available, we moved a few people into the server, infrastructure and network security sections.

Then another item caught our attention on the O/PTN Web site. Our 3C2 technicians possessed some of the skill sets of our 3C0 infrastructure technicians. We drew up plans to collocate our 3C0 and 3C2 shops and share common skill sets. In fact, our present infrastructure shop is 50 percent 3C2 technicians.

Now on an efficiency path, we took some other unique actions. After having our external Web site defaced by a hacker in October 1999, we decided to use CD ROM media to protect it in the future. The "live" external data is on an internal server, while the external Web site is actually just a read-only copy. To enhance our ability to support DMS as it moves forward, we created a DMS user terminal area in the NCC – similar to a telephone calling center. With both classified and unclassified stations in the vicinity of the 24-hour help desk, we are positioned to continue to provide a smooth transition to that new message system.

At the 36th Communications Squadron Network Control Center, we're comfortable with what we've achieved. In fact, we've got more up our sleeves as we are in the process of moving to a new facility. And maybe they'll again be saying, "This time last year, everything was different…."

Rapid application development yields faster inspection results

By Capt. Samuel D. Bass
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Headquarters Air Mobility Command
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Information technology is only effective if it helps an organization accomplish its mission. The Air Force is unique in that much of the support we need to accomplish our warfighting mission cannot be obtained from off-the-shelf solutions. When one of those unique mission-related requirements can't be met with commercial software, Air Mobility Command calls the Rapid Application Development element for solutions. As part of HQ AMC's Computer Systems Squadron, the Software Engineering Flight provides application development, maintenance and support. Home to more than 25 programmers, the flight's RAD element can turn unique blue-suit requirements into a solution that meets and usually exceeds the original concept. One of those solutions created by the RAD element is getting a lot of attention not just from AMC, but from around the Air Force.

A little more than a year ago, AMC's Inspector General team asked RAD about an intriguing possibility: replacing their clipboards with handheld computers. As many of us in the Air Force know from experience, inspectors would record their observations on paper as they evaluated various areas and personnel. At the end of the day, the inspectors would compile their individual findings. Once the team concluded the inspection, they would brief the overall results and then return to their home station to compile the final report, which would usually take several intense weeks. The report was sent back to the inspected unit, which then had to interpret the data to find the cause of any observed discrepancies. Laptop computers and e-mail made portions of the process easier, but handheld computers and Web-enabled databases had the possibility to revolutionize the system for both the inspector and the inspected.

In addition to the advances in technology, the AMC IG team had to react to increased operations tempo, so efficiency throughout the system was critical. Programmers from the RAD element met with the IG team to learn the inspection process and to refine the requirements for what would become the Inspector General Performance Reporting System. The use of handheld computers would make data collection easier for the IG team, but it was during these initial planning meetings that the real revolution began. The RAD programmers discussed linking the database with a Web browser, which would enable a user from a remote installation to request specific information. Giving commanders and supervisors the ability to compare inspection results across a unit or against other wings in real time would eliminate the need for extensive data col-

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Using the Internet and a Web browser, IG Performance Reporting System users can get broad inspection results or click on individual items to get more detailed information. Reports and tables can be generated in response to user requests.

RAD

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lection and analysis. Corrective action could be planned as soon as the data was posted. The RAD element and the IG team decided that combining handheld computers and a Web-enabled database with the inspection process would result in impressive gains in productivity.

The resulting RAD-developed PRS enables quick data collection, simplifies the compilation of inspector comments, and provides immediate and detailed results to the user. IG PRS revolves around two main components: the deployable system and the database servers. The deployable system begins in the hands of each inspector, who is equipped with Palm V handheld computers. Each Palm V is loaded with inspection forms for the inspector's responsible area. On the Palm V, the inspector can record inspection status and any desired notes. At the end of the day, the inspector uploads the Palm data to a deployed network of laptops. On the laptops, inspectors can refine the team's observations that are now stored in the inspection database hosted on a deployed laptop server running Oracle 8i software. Once the inspection is complete, the deployed database is uploaded to a server, which hosts the cumulative AMC IG inspection database. To give inspectors the capability to conduct several inspections at different locations or observe real world operations at the same time, the system can handle multiple deployable systems, reflecting the current emphasis on expeditionary capabilities. Once the deployed data is uploaded, commanders from installations around the world can view and compare inspection results using a password-protected Web interface.

The Inspector General Performance Reporting System continues to receive praise from the IG team and users of the Web interface from inspected units. The Air Combat Command IG is evaluating the system for its own use and units from around the country have asked about the system's applicability to their unique requirements.

Evaluating wireless solutions for tomorrow

Nextel provides cost $avings at Dover

By Lt. Col. Linda R. Medler
436th Communications Squadron Commander
Dover AFB, Del.

Before you know it, 2005 will be here. And why is that so important? Because that's the deadline Congress has set for converting all Land Mobile Radio systems, commonly referred to as "bricks," from wideband to narrowband frequencies. The estimated bill for this conversion, at Dover AFB alone, is about $10 million. The good news is we've found a way to cut this bill by 97 percent! This savings potential, plus a challenge by the wing commander to help him "get rid of his brick," was all the impetus 436th Communications Squadron needed to find a way to leverage information technology to provide better wireless communications for the base.

In November 1999, the comm squadron replaced the commander's net LMRs with the Nextel handheld device, which permitted the wing's senior leaders to put away their bulky bricks once and for all. It also consolidated three wireless devices into one. Now the wing's leaders are no longer seen juggling cell phones, pagers and radios, but carrying a single handheld unit the size of a small cell phone. The push of a button radios the command post and base switchboard operators, or anyone else on the commander's net. Pages can be sent by telephone or e-mail. The instrument also provides voice mail, instant messaging, normal cell phone support and potential Internet connectivity. This affords more flexibility and better comm support both on and off base. The Nextel radio range far exceeds that of the LMR system. We can radio from as far north as McGuire AFB, N.J., to as far south as the lower Delmarva Peninsula – a range of about 180 miles – a great improvement over the estimated 10 mile radius of the bricks! Additionally, using a reprogramming feature, radios can be used outside the local calling area, making this a deployability option as well.

The success of this device in replacing the commander's net gave birth to the idea of replacing all the cell phones at Dover with Nextels. The savings will be substantial – more than $24,000 a year – but there's more to the story. We're also providing state-of-the-art technology and 100 percent communications connectivity for wing leadership, squadron commanders, first sergeants, and on-call personnel – a must in today's high opstempo environment.

But this is just the tip of the iceberg. In October, the comm squadron began replacing the base's outdated and maintenance-intensive LMR infrastructure with Nextel. AMC/SC is us-

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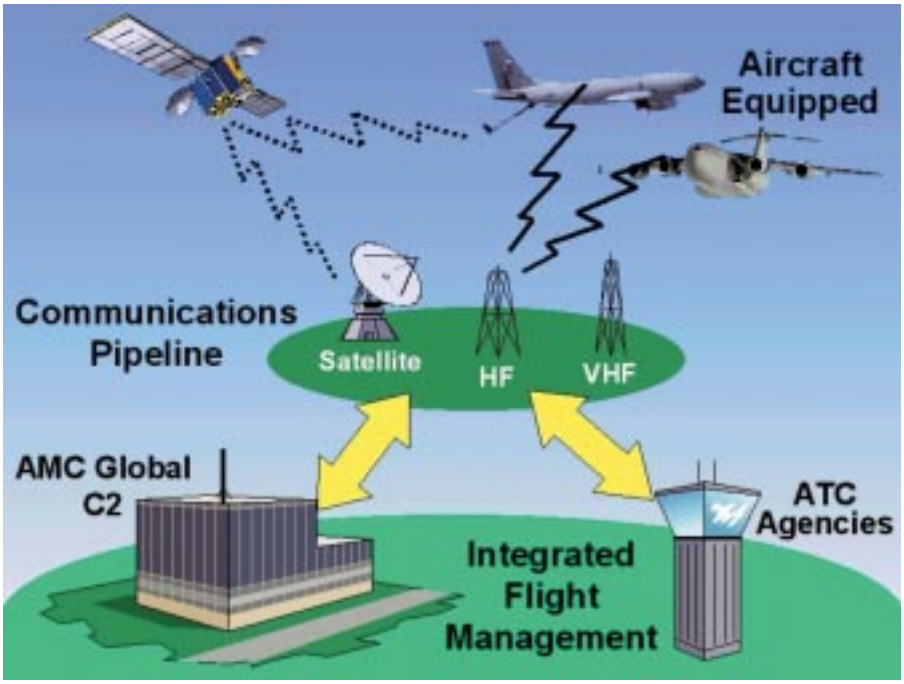
Mobility 2000

AMC uses IT for integrated approach to flight management

By Robert A. Zebroski
Architectures and Integration Division
Directorate of Communications and Information
Headquarters Air Mobility Command
Scott AFB, Ill.

Leveraging the latest communications and information systems technologies, Air Mobility Command begins a new era of enhanced command and control of its global mobility resources. Using an Enterprise Architecture framework, systems designers, programmers, military communicators, and contract civilian experts, AMC has built an impressive integrated flight management prototype that just completed its inaugural mission.



Mobility 2000 enhances AMC's ability to plan, schedule, task and execute in support of America's forces worldwide, through innovative use of aircraft technologies, communications and integrated flight management.

Mobility 2000 is an integration effort designed to advance flight safety and mission effectiveness through a concept called Collaborative Decision Making. Its primary goals are to reduce crew workload and increase mission productivity. M2K will accomplish these goals by improving communications between the aircraft and its flight manager. That's where the CDM portion comes into play. Residing within the Tanker Airlift Control Center, flight managers for the first time will become "virtual crew members" with their operational wing counterparts. Although the aircraft commander retains authority for decisions that affect flight safety, the flight manager will assist in making operational decisions by providing the aircrew with constant updates to weather, flight clearances, mission priorities, and issues that could affect the success of the mission throughout the entire flight.

M2K consists of three critical subcategories: Aircraft Enabling Technologies, Communications Pipeline, and Integrated Flight Management.

Aircraft Enabling Technologies

The vast growth in global air traffic presents increasing challenges for military aviation. Everyone is competing for the best time slots, and fuel-efficient air routes and altitudes (the "sweet" airspace). Civil aviation continues to improve air traffic control procedures to increase system capacity, flight efficiency and flight safety. The M2K team, comprised of AMC's military, civilian and contract professionals from the functional and systems integration offices, has succeeded in laying the foundation for continued integration of Global Air Traffic Management and the Aircraft Communication Addressing and Reporting System technologies into all of AMC's Global Reach aircraft. Taking the high road, M2K directors and their contract partners exchanged people, processes and strategies over the past year to arrive at a solution that will provide AMC, for the first time, access to that "sweet airspace" formerly accessible only to civilian aircraft. The result will be the ability of AMC's pilots, carrying rapidly deployable forces and equipment, to choose their

own routes, speeds and altitudes in near-real time. This amounts to a shift from air traffic "control" to air traffic "management."

Communications Pipeline

To come so far in such a short time required an intensive program of spiral development (a three-month project) and close-knit teamwork unparalleled in previous systems development efforts. Every avenue of communications is being exploited in an effort to provide visibility of en route aircraft and the resources they carry around the world. This is being done through a partnership with the Aerospace Command, Control, Intelligence, Surveillance and Reconnaissance Center, the Air Force Research Lab and Delta Air Lines. During a visit by Maj. Gen. Gerald F. Perryman, AC2ISRC commander, in June, he lauded the team's effort and said he believes AMC's approach to IT development is one to emulate. Again, during an AC2ISRC sponsored Global Command and Control Way Ahead meeting in June, the AC2ISRC technical director, Garry W. Barringer, reported the M2K effort was a "model of IT success." Considering the importance of the effort and its potential improvements in aircrew use, fuel savings and en route efficiencies, it's no wonder AMC's commander, Gen. Charles T. Robertson Jr., said, "Mobility 2000 is a must do! Do not waste another day!"

Integrated Flight Management

Probably the most innovative portion of the project is the concept of Integrated Flight Management. Modeled after Delta's aircraft dispatch operations in Atlanta, Flight Managers provide the "virtual crew member" to augment aircrews from pre-flight to crew rest through yet another innovative system, the Integrated Flight Management Tool. The IMT was designed, developed and implemented by systems professionals working under the Federated Systems Group, an AMC contractor hired to build the prototype. It's a flight following tool that accesses a variety of legacy systems, such as the Automated Computer Flight Plan system, Global Decision Support System and the Global Air Transportation Execution System, to name a few.

The first six FAA-trained and certified FMs are a mixture of officer and enlisted aircrew personnel brought in to exercise the prototype and provide the basis for hiring and training the next series of civil service FMs expected to start coming on line by the end of the year. Using the IMT, FMs will actually "paper" the crews with everything they need to complete their mission.

Using ACFP, FMs will file the departing aircrew's flight plan for them, determine the best route, and provide accurate weather and payload information in one package prior to the crew's arrival at the aircraft. At the local flying unit, aircrews arrive at their current operations desk, pick up the complete mission folder and proceed to the aircraft. Since their flight plan has already been filed, the crew can begin their preflight procedures right away.

Integrated Flight Management links aircrews, ATC, field units and Flight Managers in the TACC for improved mission effectiveness and AMC asset visibility.

In the future, M2K visionaries foresee the preflight and even aircraft loading being done before crew arrival, so their only task will be to start engines and depart. Of course this vision will mean a complete change in AMC policy for its airlift wings and operational squadrons. For now, the M2K Concept of Operations provides a flexible template for the future of M2K.

As the development of M2K initiatives progressed, team leaders saw the need for closer coordination between AMC and the affected wings. To enhance this cooperation, project managers initiated the concept of Wing Advocates to help build confidence and communicate directly with the aircrew and support agencies, who in effect are the other end of the pipeline for M2K. During several road trips, functional and systems experts traveled to Charleston AFB, S.C., Dover AFB, Del., McGuire AFB, N.J., and Ramstein AB, Germany, to tell the story of M2K and collect names from each wing commander to be their wing M2K advocate. Interest level at the wings proved overwhelming. With the advocate's help, M2K took the next step toward operational status: user input.

Taking advantage of the power of the Internet, project leaders directed the creation of an M2K Web site (m2k.scott.af.mil), which provides a program overview, plan, project schedules and status, frequently asked questions, and other features. The site has a library of documents detailing various aspects of M2K program development. It also affords an e-mail link to the M2K team at amc.m2k@scott.af.mil for users to ask questions, make requests, and submit suggestions and recommendations. Watch for the M2K Web site to add information and make improvements, as the prototype grows and the program continues to evolve.

Information Operations: Is the Air Force ready for it?

By Capt. Keith Shank
Network Operations and Security Center
Headquarters Air Mobility Command
Scott AFB, Ill.

Information operations is a concept recorded as far back as Homer's "Iliad," where the Greeks gained access to Troy with the original "Trojan Horse" in 1500 B.C. IO has been used successfully and unsuccessfully in every major conflict throughout history. Yet today, if the question were asked, "What constitutes IO?" many answers would invariably relate to computers, hacking, viruses and other similar considerations. While it is true that most information (in non-third world countries) revolves around computers, the concept of IO is far greater and far more encompassing.

Any successful IO campaign integrates multiple disciplines across the board, both offensively (psychological operations, electronic warfare, military deception, information attack and physical attack) and defensively (information assurance, operations security, counterdeception, counterintelligence, counter-PSYOPS and electronic protection). These disciplines, as laid out in AFDD 2-5, need to be fully integrated into any campaign to create a complete and successful IO.

Too often, the kinetic options and brute force are used. The image of a guided missile impacting into the center spire of a railroad bridge is hard to beat as far as most of the military is concerned. But what price is paid to destroy the target and deliver that photo to the public? The pilot, the planes, the mission all had to be geared up, deployed in theater and paid for in order to destroy the target. If a cheaper, more efficient way existed, wouldn't the wise choice be to deploy that option?

In some cases, that option does exist — the IO option. As an example, if friendly forces using IO can keep enemy commands from reaching enemy fielded forces rendering them inoperable, then in some cases, it's just as effective as physically destroying the bridges and roads traversed by enemy forces. The IO option will most likely be cheaper.

Our challenge is to get personnel from all walks of the Air Force to understand IO integration, IO implementation and the benefits IO provides. "Information superiority" needs to be as universally understood as "air superiority." The IO details exist, as presently defined in doctrine documents Joint Publication 3-13 and AFDD 2-5. The Air Force has initiated IO education/training and is developing tactics, techniques and procedures.

Is the Air Force ready to give up kinetic kills in favor of more economically viable targeting? Are analysts willing to shift their focus to be IO centric? Is every player willing to work together to win wars before they begin? Is the Air Force ready to fully implement IO solutions?

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ing Dover as its Nextel business test case. A moratorium on purchasing LMRs, plus the mandate to transition to narrowband, makes this an opportune time to "think out of the box." The cost savings are projected to be in the millions. The base will get 100 percent reliability and 100 percent guaranteed coverage for about $340,000 a year, without investing in a costly infrastructure that could be out of date before it's even fully fielded. The Nextel option will cost just over three percent of the estimate to replace our LMR system.

Using innovative thinking, the comm squadron will combine Nextel technology with Joint Tactical Radios (when fielded) as its base LMR replacement strategy. This approach will provide better wireless communications for significantly fewer defense dollars and could have Air Force-wide impact, especially considering that current estimates to replace Air Force LMR systems are in the hundreds of millions of dollars. At Dover, we aren't waiting until 2005 to figure out our LMR strategy. In doing so, we will provide a viable option for potential implementation across Air Mobility Command, and perhaps across the Air Force. And, by the way, our wing commander took a worldwide Nextel overseas, and called us from the United Kingdom and Spain.

Ellsworth's Theater Deployable Comm Warrior Academy molds 3-levels into network warriors

ELLSWORTH AFB, S.D. – Ten eager new 3-levels wait expectantly as the neatly attired civilian steps up and asks a leading question? "What is a network?" With that question begins a series of classes designed to enable the 10 students to progress from their technical school training to full Network Control Center position qualification. The overall goal is to mold them into network warriors, both in garrison or deployed.

The civilian instructor is Bobby E. Akins, Air Force Engineering Technical Services. Mr. Akins is assigned as the Regional Enterprise Network Specialist at the 28th Communications Squadron, at Ellsworth. As well as network services and training for Ellsworth, he also supports Minot AFB, N.D.; Offutt AFB, Neb.; and Whiteman AFB, Mo.

Mr. Akins is constantly involved in all aspects of the Ellsworth network weapon system, and has been the lead in making Ellsworth a model for network related training. Mr. Akins started the local project to transform Information Managers into Workgroup Managers in 1996, two years before it was an identified program. The result was a benchmark program pushing ACC into the 21st century. A new program was born.

Ellsworth's Theater Deployable Comm Warrior Academy is now reality. It's a series of individual classes designed to walk students through classroom lectures and hands-on training, and then back in to an operational environment (deployed and in garrison), where the class materials are put into practice. Over the past year, Ellsworth built an outstanding facility for this training with the latest technologies. With PIII650 computers, routers, switches and hubs, it "has more computing power than some small nations," according to Mr. Akins.

That leading question, "What is a network?" starts the training with network essentials. Over several months, the training progresses through network operating systems, network administration, network infrastructure management, network security and information protection.

To ensure students are exposed to both home and deployed environments, part of the training is conducted in a deployment exercise area. The students have to be involved in not only the network side, but the logistics side. They are charged with equipment movement and even setting up the tent that will be their deployed work area. As the experience levels evolve, the aim is to incorporate the TDC/ICAP work center and use microwave equipment to practice deployed exercises in near-real world scenarios.

Staff Sgt. Robert Steffy instructs a class at the Theater Deployable Comm Warrior Academy.

Now that the TDCWA is a reality, Staff Sgt. Robert Steffy is taking the lead from Mr. Akins as primary instructor. The first 10 students finished in August, with other classes being scheduled.

In addition to the academy, the classroom facility is used for continuing training of Workgroup Managers to proactively ensure they're given the best education possible. Additionally, it's used as an experimental lab where new network technologies and upgrades can be properly tested before being implemented on the Ellsworth live network. One last use of the center is to support base level training. When needed, the center provides a phenomenal environment for training other than that required for the TDCWA or Workgroup Managers.

Quality training, on quality equipment, for quality people. The TDCWA concept enables the 28th Communications Squadron and Ellsworth to set the "benchmark" for network evolution.

(Article courtesy Bobby Akins)

AFCA NCO earns NSA's top IA award

Story and photo by Master Sgt. Ed Ferguson
Air Force Communications Agency
Scott AFB, Ill.

Senior Master Sgt. Stephanie Harwell

A senior noncommissioned officer assigned to the Air Force Communications Agency at Scott AFB has earned the National Security Agency's top award for Information Systems Security. The Frank B. Rowlett Trophy for individual achievement for 1999 was presented to Senior Master Sgt. Stephanie D. Harwell by Lt. Gen. Michael V. Hayden, director, NSA, during an awards ceremony Nov. 1 at Fort Meade, Md.

Sergeant Harwell represented the Air Force as the Information Systems Security Professional of the Year. She competed against 16 nominees representing the best of the best across the federal government. The NSA award recognizes a single individual performing information assurance duties whose contributions most improved the security of communications and information systems at the service, unified command, Department of Defense, or national level; or improved the security of U.S. Government information.

During the award period, Sergeant Harwell served as chief of AFCA's Air Force Information Protection Field Support Branch. She was responsible for the day-to-day operations and management of the branch, which supports all active, Guard and Reserve bases Air Force-wide with policy and procedures for computer security, network security, certification and accreditation of automated information systems, individual product vulnerabilities, firewall management, communications security, and information assurance training and awareness.

"She is a dynamic powerhouse whose primary responsibility during the award period was securing the Air Force enterprise network," said Garry Lee, Chief, Information Protection Division at AFCA.

"Steph was the driving force behind security requirements for the Air Force's 'Certificate of Networthiness' process," he said. "Her network security expertise resulted in documented requirements integrating security into systems design, thereby ensuring risks were mitigated for any vulnerabilities introduced into warfighting systems already on the enterprise network. The new process drove the Air Force's major change to the DOD C4I Support Plan.

"Any system being deployed on an Air Force installation must meet the Air Force's network security requirements," Mr. Lee explained. "DOD systems are now driven to meet security requirements to maintain the integrity of the Air Force enterprise. The new process requires each communications or information system to have Air Force-level approval to operate before being connected to any Air Force infrastructure. This strengthens the weak link in the chain by ensuring security is designed into the system rather than added when the system arrives at the base.

"To stop the ever-widening gap between operations and policy, Sergeant Harwell spearheaded the creation of the Air Force's Computer/Network Security Working Group," Mr. Lee said. "She brought in both operations and policy experts from the major commands, field operating agencies and individual bases. This group was the first to bring operations and policy experts together to achieve a common goal: securing the network with operational policy and procedures that complement each other. Under her experienced leadership, the team created cutting-edge policy and resolved pervasive computer and network security issues impacting the entire Air Force.

"She is strong under fire and the absolute best in her field," he said. "She has been lauded by Headquarters AF/SC and Air Staff time and again for her computer/network security expertise. Her ceaseless passion for advancing information assurance across the Air Force has made senior leadership's vision of 'networks as a weapon system' and 'information superiority' a working reality. Her innovative ideas and proactive leadership have consistently put AFCA on the leading edge for providing real-world solutions to our warfighters' ever-evolving communications and information needs," said Mr. Lee.

"While it's given as an individual award, it was teamwork that allowed me to win," Sergeant Harwell said. "It was a total team effort. Nothing I was recognized for was done alone. This award is an achievement for the entire AFCA Information Protection Division."

Sergeant Harwell entered the Air Force in July 1980. She is married to Master Sgt. Reginald Harwell, who is assigned to the Headquarters Air Mobility Command Inspector General's Office.

Hanscom's new training 'just in time'

By Roy Heitman
Public Affairs Office
Electronic Systems Center
Hanscom AFB, Mass.

Hanscom is providing "just-in-time" training to Air Force network management technicians at Air Force bases throughout the United States with the Combat Information Transport System Mobile Training concept.

The Electronic Systems Center's CITS Program Management Office contracted with Materials, Communications and Computers, Inc., to develop a system designed to train technicians more quickly and efficiently. After successfully completing a six-month pilot program to prove the concept's effectiveness, program office officials decided to continue the training.

CITS is primarily a collection of communications-related initiatives designed to update and improve the Air Force's base information technology infrastructure.

The network management system and base information protection portion provide hardware and software to make network technicians more effective and better able to protect and manage base information systems. The system originally used a regional training concept to prepare its technicians.

As new software and hardware products were installed, the program office arranged for training sessions to be conducted at regionally selected bases. Under this concept, 10 to 12 bases in the area surrounding a host base were each allowed to send one or two technicians to the training.

This had several drawbacks: it involved significant travel costs for the units sending their technicians; it took those technicians away from their units for up to three weeks at a time; each base could only send a limited number of students to each class; and the classroom equipment (laptop computers) did not duplicate the diversity of equipment found in a typical network.

The CITS Mobile Training concept was designed to correct these deficiencies.

CITS program officials then worked with the contractor to build on the previous mobile training programs' success, and to design a mobile training classroom that included a high fidelity network laboratory that would provide a realistic environment for learning the complex operation of these network management tools.

The company designed and integrated a full-featured representation of a typical base screened-subnet architecture that employed routers, switches, hubs, firewalls and workstations. Housed in a recreation vehicle body, the classroom makes periodic visits to each base, providing only the course or courses the base needs at any given time.

Students are taught in groups of four to eight and learn to operate the network management system and base information protection tools in a realistic, hands-on environment, and they are still available to their units before and after class.

The initial pilot-program phase required two courses to be developed — Sidewinder Firewall and HP Open View Network Node Manager — and the outfitting of a prototype classroom. Using a team of company instructors and Air Force subject matter experts hired as consultants, MCCI produced the first two courses in record time.

Both received excellent reviews from evaluators and students alike. The CITS program management office has selected Lucent Technology's QIP product to be the basis for the next course produced by the MCCI courseware team, and has also validated the requirement for a second mobile classroom.

(Air Force Print News, courtesy of AFMC News Service)

AFSOC's comm Guardsmen have new commander

HALL AIR NATIONAL GUARD STATION, Ala. – A 15-year Alabama Air National Guard veteran is the newest commander of the 280th Combat Communications Squadron.

Maj. Steven Poole assumed command of the squadron from Lt. Col. Charles Sachs during a ceremony at the squadron. Colonel Sachs has been reassigned to the 226th Combat Communications Group, Montgomery, Ala.

"I'm truly honored to accept command of the 280th," said Major Poole. "I have had the pleasure of being with this unit for many years, and have witnessed the devotion and dedication of the men and women of the 280th. We're a close family and together we will continue to ensure the unit is the best of the best," he said.

The mission of the 280th CBCS is to provide communications and information systems for command and control of special operations forces worldwide, as well as respond to state emergencies as directed by the governor. The squadron joined the AFSOC team in February 1999.

(Night Flyer News Service)

Career broadening assignments provide glimpse of available comm and info positions

By James McDaniel
Communications and Information Career Program
Randolph AFB, Texas

In previous issues of *intercom*, the Communications and Information Career Program described excellent opportunities for communications and information personnel to broaden existing skills, obtain new skills, or gain headquarters level program management experience. The program is called Career Broadening and offers numerous opportunities each year to highly competitive and mobile comm and info personnel. The following CICP career broadening assignments provide a brief glimpse of available positions and highlight comm and info professionals on the move.

Janet Eitnier

Janet Eitnier, an Information Manager, obtained computer specialist skills in her recent CICP career broadening assignment. Ms. Eitnier performed both information management and computer specialist duties based on her career broadening training plan. The new skills she acquired provided her the unique opportunity to transition from information management to computer specialist in her follow-on assignment.

"Accepting a career broadening position afforded me the opportunity to bridge over as an information manager into the communications arena," said Ms. Eitnier. I've expanded my knowledge and skills, but most importantly, built a foundation that will help me grow throughout the remainder of my career."

Edward Wolfe is a telecommunications specialist in a career broadening assignment at USCENTCOM/J6. Mr. Wolfe is one of the few CICP career broadeners working joint communications and information issues.

"Career broadening has afforded me the opportunity to reap daily benefits by gaining knowledge, insight, experience and training in this highly volatile theater of operations," said Mr. Wolfe. "My areas of concentration have fluctuated from presidential directives on spectrum usage to an ambassador's concerns on a foreign civil aviation project. I work in both a real world and an exercise environment that includes land, sea, air and space concerns. The wealth of experience gained could only have been possible with my assignment to this career broadening position."

Edward Wolfe

Mr. Wolfe's new perspective could be invaluable in his next assignment as the Department of Defense increases joint service operations.

Jamesia Rabb

Jamesia Rabb is a computer specialist working management information systems and configuration management issues at the Air Force Personnel Center in support of Air Force implementation of the Defense Civilian Personnel Data System. This challenging assignment has enhanced her understanding of the personnel community's functional requirements and greatly benefited the Air Force Personnel Center.

"This has truly been an experience of a lifetime," said Ms. Rabb. "Career broadening has offered me the opportunity to interact with senior leadership who are developing the future structure of our personnel system and civilian career programs. The insights gained will have a lasting impact on my career."

These examples illustrate the diversity of career broadening opportunities provided each year to CICP registrants. Announcements for agencies interested in hosting career broadening positions and applications for career broadening vacancies usually occur in the February to March time frame.

Look on our CICP home page at http://www.afpc.randolph.af.mil/cp/cicp/ for our next announcement. If you are interested in this highly competitive and rewarding opportunity, please contact Mike Zimmerman at DSN 665-3691 or Michael.Zimmerman@afpc.randolph.af.mil.

Correction

In the Deployable Communications article in the September *intercom*, it incorrectly stated CICP would begin advertising all job vacancies on http://www.usajobs.opm.gov starting the first of that month. Please note that this date is incorrect. CICP will begin advertising all job vacancies on http://www.usajobs.opm.gov in the future. For now, CICP registrants still need to complete the AF Form 2675 to compete for CICP covered positions.

Editor's note: As the years go by, people come and go, but a few make an indelible mark on the Air Force. Their extraordinary service touches many people and leaves a lasting legacy. "Comm legends" spotlights people who have dedicated a long and distinguished career to the comm and info mission area and established a record of achievements that few can match.

Please e-mail your own "comm legends" features to intercom@scott.af.mil.

Pat Patrick

By Lori Manske
Air Force Communications Agency
Scott AFB, Ill.

A retired chief master sergeant, retired civil servant and patriot, Laurence "Pat" Patrick's combined federal career spanned five decades and the administration of 10 presidents. When he retired from his civilian career in January 1998, he was the field support branch chief of the Information Protection Division at Air Force Communications Agency.

Following basic training at Sampson AFB, N.Y., in 1951, Mr. Patrick started his military career as a Morse Code radio intercept operator and radio finger printing operator. Assignments in airborne radio maintenance, missile systems maintenance and computer systems maintenance took him to such places as Mississippi, Illinois, New Jersey, Florida, New York, Colorado, Virginia, Germany, Okinawa and England. He retired from the Air Force in 1980.

His performance reports read like a "Who's Who" among the Air Force's most valuable NCOs. They include indorsements by communications leaders such as Maj. Gen. (later Gen.) Robert T. Herres, a former commander of AFCC; Maj. Gen. Robert E. Sadler, a former commander of Air Force Communications Service; Brig. Gen. (later Maj. Gen.) William R. Yost, a former vice commander of HQ AFCS; Brig. Gen. (later Maj. Gen.) John T. Randerson, a former vice commander of European Communications Area; Col. (later Brig. Gen.) Robert O. Petty, a vice commander of HQ ECA; and Col. (now Brig. Gen.) Gil Hawk, then director of Systems at AFCA.


Chief Master Sgt. Pat Patrick when he was a senior airman advisor.

Mr. Patrick said he joined the military because of job security. "Good benefits, great people, travel, and my red, white and blue blood kept me in," he said.

When he looks back on his military career and his accomplishments, Mr. Patrick recalls a heroic act that earned him an Air Force Commendation Medal. In 1966, as a master sergeant, he prevented a major accident at a launch site when he entered the main exhaust plenum area of the missile complex at Kadena AB, Japan, where an armed missile was on fire. Fighting thick smoke, carbon monoxide, intense heat and low visibility, he helped battle the blaze for two hours before it went out.

As a "people" person, he's also proud of his time as senior enlisted advisor at RAF Croughton, England, for four commanders. He kept them informed of matters affecting the morale and welfare of more than 400 enlisted people.

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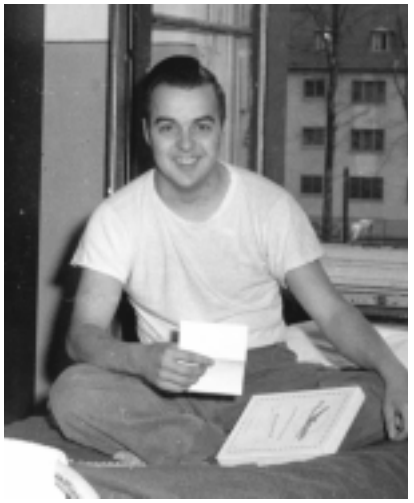

Mr. Patrick in 1954 at Darmstadt, Germany.

PATRICK

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Mr. Patrick first crossed paths with now Lt. Gen. Harry D. Raduege at RAF Croughton, England, when they both worked in the 2130th Communications Group. General Raduege was a newly pinned captain assigned to maintenance and then Master Sgt. Patrick was operating the base's AUTODIN switch. "You couldn't miss him—crew cut, spring in his step, and an ability to turn heads with his commanding presence as soon as he entered a room," said General Raduege. "He was one of those NCOs that all lieutenants and captains need to learn from, and I did." General Raduege is now the director of the Defense Information Systems Agency.

"If you ever planned to take on this consummate professional, you'd better get a good night's sleep and have your documentation squared away. He taught me that nothing replaces job knowledge, doing your best, and having a great attitude. He was a perfect teacher for this impressionable O-3," General Raduege said.

Patrick's civilian career began as a product assurance evaluator with the U.S. Army in St. Louis in 1981. He moved to AFCC at Scott AFB in 1982. He was chief of 11 different branches or divisions while at AFCC, the Technology Integration Center, Air Force C4 Agency, and AFCA.

He was nominated for the Outstanding AFCC Civilian of the Year Award for 1984. He was an equipment specialist, communications management specialist, information systems management specialist, communications-computer systems manager, and a telecommunications manager before he retired as a GM-13.

"Unyieldingly principled and loyal, Pat set an example of duty and rectitude," said Mike White, who has known Mr. Patrick for 18 years. "People like Pat leave a legacy of compassion, honesty and toil for those who can only try to walk in their footsteps." Mr. White worked with Mr. Patrick in the Information Protection Division at Air Force Communications Command.

Another former Information Protection co-worker, Ron Goessman, said, "Mr. Patrick bleeds Air Force blue. He is a duty, honor, country guy personified. He was a great co-worker who always put other people's feelings ahead of his own. He worried about his troops and his supervisors alike and was always there to help solve problems in time of need. If I had to sum Pat up I would say he is the kind of friend that when you are in trouble you don't have to look for him, he'll find you."

Armed with a positive attitude, Mr. Patrick said, "Every day I wake up is 'fantastic'." He is proud of being the best supervisor he could be by caring enough to listen to people, guiding and encouraging where needed, and praising and rewarding those deserving.

When he looks back, he recalls how comm has evolved. "The first computer I worked on was the AN/FSQ-7 SAGE System at 20th NORAD, Fort Lee AFS, Va.," said Mr. Patrick. "It had 50,000 vacuum tubes, its little memory was 512k, its big memory was 2048k and it took up one floor of a building that almost covered a city block. Now my 5-year-old granddaughter has a Pentium laptop and teaches me a few things."

Some things haven't changed, according to Mr. Patrick. "The Air Force still recruits and retains quality people and provides equal opportunities. Properly trained, good people are what make the Air Force the best military/civilian work force in the world."

Everyone is a role model or influences you in some way, according to Mr. Patrick. "Lt. Gen. Harry Raduege has been my most positive role model," he said. "He

Pat Patrick has always been an avid runner.

showed me you can get results without raising your voice. He makes you want to do your best for him. Ron Goessman had more compassion for his people than anyone I have ever worked for. I learned from Brig. Gen. Gil Hawk to surround myself with good people—at work and at home."

Chief Master Sgt. Jim Hogan, now at Robins AFB, Ga., was superintendent of the COMSEC Branch when he worked for Mr. Patrick from 1994 to 1998. "I think Mr. Patrick's leadership style is best described as laissez faire with teeth," he said. "He let you do your job while selling others on how well you were performing—much like General Raduege. Mr. Patrick is a role model—honest, caring, considerate, trustworthy and reliable."

Jean Alf first met Mr. Patrick in 1982 and was a communications technician when she worked for him. "He has a great outlook on life—it just naturally flowed over to his co-workers. He always said, 'If you take care of your people, they will take care of you'," said Ms. Alf. "He let us do our jobs but when we needed help he was always there for us. People remember him for the qualities he lived and worked by—duty, patriotism, compassion and honesty." Ms. Alf is now a telecommunications specialist at AFCA.

General Raduege said the best side of Mr. Patrick was his care for both organizational mission success and for any troops or family members who needed help. "Everyone quickly realized that if the unit needed a volunteer, Pat's hand was always first to go up. He did this as a master sergeant, through his days as a chief master sergeant, and until his last days in government as a GM-13 at AFCA.

Then Brig. Gen. Harry D. Raduege officiated at Mr. Patrick's retirement ceremony in December 1997, where he presented Mr. Patrick the Outstanding Civilian Career Service Award.

"What most casual observers didn't see was Pat's care for people. Behind the scenes, he routinely stepped forward to help, not for recognition, but only to help someone in need. Many of our co-workers told me about his visits to their hospital beds, his delivered casseroles, caring counseling, and help getting them settled into a new neighborhood," said General Raduege. "When I think of Pat, I think of leadership, professionalism, and service to God, country, and fellow man. I'm honored to have worked with him and to have learned from him."

Mr. Patrick (left) with his family at his retirement ceremony. From left: His wife, Christina, daughter, Gail, granddaughter, Sara, and son-in-law, then Maj. Tony Klucking.

"The Air Force has been good to me and my family," said Mr. Patrick. "We have tried to be good for the Air Force. We are still part of the Air Force family and miss the people." He and his wife, Christina, are enjoying their retirement by spending time with their daughter, Gail, son-in-law, Lt. Col. Tony Klucking, and granddaughter, Sara.

Mr. Patrick's energy carries over into his pastime as an avid runner. Over the years he has won a number of marathons and cross-country championships.

Characteristic of his enthusiasm, Mr. Patrick recognizes his retirement not as an end but as the start of another era of his life. "If you can't take time to smell the roses, at least take time to plant them," he said.

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